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ABSTRACT

The Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) is a consortium of ministries of education in southern Africa. This bound report--one of seven--presents the research results and policy suggestions that emerged from implementation of SACMEQ's initial educational policy research project. The report looks broadly at five areas of policy concern: (1) baseline data for selected inputs to primary schools; (2) how conditions of primary schooling compare with the Ministry of Education's benchmark standards; (3) whether educational inputs to primary schools have been allocated in an adequate fashion among and within education districts; (4) the level of reading achievement for Grade 6 students; and (5) which educational inputs to primary schools have had the strongest effect on the reading achievement of Grade 6 students. Data for the study were gathered from a student test of basic reading literacy and student, teacher, and principal questionnaires. This report specifically focuses on reading achievement in the nation of Zambia. Along with reading test scores, the report presents information on the characteristics of Grade 6 students and teachers; student access to materials; conditions of school rooms and buildings; and other information on the state of education in Zambia. (Contains 14 references and 36 tables.) (WFA)

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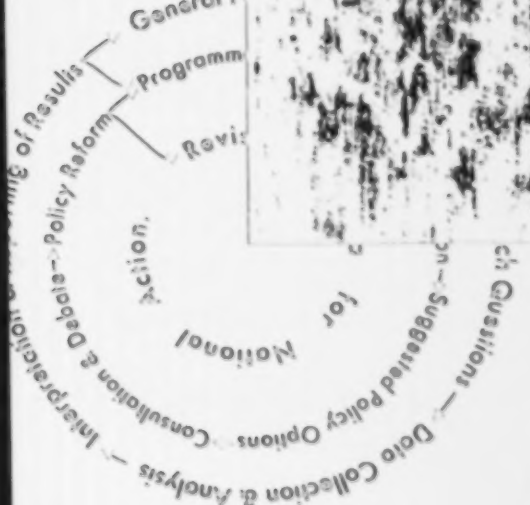
The quality of education: some policy suggestions based on a survey of schools



Zambia

by
Manasseh Nkamba
Joe Kanyika

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Ministry of Education
Lusaka, Zambia

UNESCO
International Institute for Educational Planning

SACMEQ Policy Research: Report No. 5
Series Editor: Kenneth N. Ross

The quality of primary education some policy suggestions based on a survey of schools

Zambia
An Interim Report

by

Manasseh Nkamba

and

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Lusaka, Zambia

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Foreword

The Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) is a consortium of Ministries of Education located in the Southern Africa sub-region. For several years these Ministries have worked in close partnership with the IIEP in order to undertake educational policy research with the main aim of generating reliable information that can be used by decision-makers to plan the quality of education.

In January 1997 the Government of Zimbabwe officially registered SACMEQ as an international non-governmental organization. SACMEQ's Sub-regional Co-ordinating Centre is located within UNESCO's Harare Office. The work of the Centre is managed by a Director and is guided by a Committee chaired by Zimbabwe's Minister of Education. The 'founding members' of SACMEQ are the IIEP, Kenya, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Tanzania (Mainland and Zanzibar), Zambia, and Zimbabwe.

SACMEQ's programme of research and training has four features which have optimized its contributions to the field of educational planning in Africa: it provides research-based policy advice concerning issues that have been identified by key decision-makers, it functions as a co-operative venture based on a strong network of educational planners, it combines research and training components that are linked with institutional capacity building, and its future directions are defined by the participating Ministries.

SACMEQ's initial educational policy research project was assisted during 1994/1995 through a Funds-in-Trust (FIT) agreement between the Italian Government and UNESCO. In 1996 SACMEQ's sub-regional activities were financed under an FIT agreement with the Netherlands Government. This arrangement was renewed in 1997 for the launch of SACMEQ's Sub-regional Co-ordinating Centre.

The costs associated with future SACMEQ projects will be financed from two sources. First, the SACMEQ Sub-regional Co-ordinating Centre will support co-operative sub-regional activities which include project design, sub-regional training workshops, construction of data archives, and dissemination of results. Second, the participating Ministries will cover their own within-country research costs related to printing, fieldwork operations, data entry and cleaning, the provision of general overheads for project co-ordination, and the publication of national reports.

This report presents the research results and policy suggestions that emerged from the implementation of SACMEQ's initial educational policy research project. It is offered to other educational planners – not as a final evaluative comment, but rather as a stimulus for constructive discussion of educational policy options, and also as a successful model of productive collaboration among educational planners from many different countries.

Hon. Dr S.K. Syamujaye
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Dr Jacques Hallak
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Special note on this Interim Report

During the implementation of SACMEQ's initial educational policy project in Zambia there were major data losses due to non response. At the national level, data were obtained from only around three quarters of the pupils selected into the sample. At the regional level, data loss due to non response was particularly high in the Luapula region, where around one third of the pupils did not respond.

The source of this non response was not completely clear from the field records submitted by the data collectors. In Luapula four of the 15 schools selected into the sample either refused to participate or were not visited by the data collectors. Further data loss occurred in Luapula because 10 percent of the pupils in the remaining 11 schools were absent on the day of testing. Major loss of data also occurred in other regions: Lusaka (30 percent loss), Western (30 percent loss), and Eastern (27 percent loss).

These levels of data loss were far larger than had been set down as part of the quality control standards for SACMEQ's initial project. In the other countries involved in the project, the response rate at the pupil level was 90 percent or more.

It was beyond the scope of this report to conduct detailed analyses of the degree of bias that may have occurred in the Zambian data due to high levels of non response. Therefore, this report must be treated as an 'Interim Report' until further analyses of the data have been undertaken and reported by the Planning Division of the Zambian Ministry of Education. The results of these supplementary analyses should be available in late 1998.

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SACMEQ's initial educational policy research project was a co-operative cross-national initiative focused on shared policy concerns that were related to planning the quality of primary education in the Southern Africa sub-region. Each national educational policy report prepared for this project therefore represents a 'team effort' that has been made possible through the hard work of many people.

The International Institute for Educational Planning and the SACMEQ network of Ministries of Education would like to thank everyone involved in the successful implementation of this important project and, in particular, to acknowledge the contributions made to this report by the following people.

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Chapter 1

The setting for the study

Introduction

Zambia constitutes a fairly large part of Central and Southern Africa with a total land area of 752,614 square kilometres. It is landlocked, surrounded by the Democratic Republic of Congo, Mozambique, Angola, Malawi, Namibia, Tanzania, Botswana and Rwanda. Zambia became an independent Republic in 1964 – at around the same time as other ex-British colonies in Africa. In 1996 the estimated population was 9.1 million with a population density of 11 inhabitants per square kilometre.

Since Independence, Zambia has recognized education as the engine for human development, economic growth, and a prerequisite for industrialization. With a mid-1990s population growth rate of 2.7 percent per annum and with 42 percent of the population living in urban areas, the widespread provision of effective social services, including education, has remained a considerable challenge.

Zambia is a multilingual and pluricultural country. The official language is English, whilst local languages are spoken at home. The seven main languages in Zambia are: Bember, Lozi, Nyanja, Kaonde, Tonga, Lunda, and Luvale.

School education in Zambia

The education sector is managed mainly by two Ministries: the Ministry of Education (MOE) and the Ministry of Science and Technology and Vocational Training (MSTVT). The Ministry of Education is responsible for providing primary and secondary education, teacher training and continuing education. It is also responsible at a policy level for university and pre-school education. On the other hand, the Ministry of Science, Technology and Vocational Training, through the Department of Technical Education and Vocational Training (DTEVT), offers training at technologist, technician, and craft levels in technically oriented programmes.

There are also two other ministries that have smaller-scale involvement in the provision of education. These are: the Ministry of Sport, Youth and Child Development (MSYCD) and the Ministry of Community Development and Social Services (MCDSS). These two ministries offer apprenticeship skills training and adult literacy programmes.

The stated mission of the Ministry of Education is "to guide the provision of education for all Zambians so that they are able to pursue knowledge and skills, manifest excellence in performance and moral uprightness, defend democratic ideals, and accept and value other persons on the basis of their personal worth and dignity, irrespective of gender, religion, ethnic origin, or any other discriminatory characteristic." (Educating our future: Ministry of Education Policy, Zambia, 1996).

The education system follows a 7-5-4 structure. That is, seven years of primary school education, five years of secondary and four years of tertiary education and training. The secondary school sector is divided into two years of junior secondary and three years of senior secondary. Tertiary education ranges from two years to seven years depending on the nature of training.

There are moves in Zambia to establish a 'new' education structure. The fundamental units in this will be basic schools running from Grade 1 to 9, and high schools running from Grade 10 to 12. Eventually the education system will have a 9-3-4 structure: education for Grades 1-4 will be known as 'Lower Basic', for Grades 5-7 as 'Middle Basic', and for Grades 8-9 as 'Upper Basic'. This new structure will be phased in over the next decade and in the interim period these two structures, 'old' and 'new', will coexist.

(a) Pre-primary education

In Zambia, early childhood and pre-school education are the responsibility of councils, local communities, non-governmental organizations, private individuals, and families. However, within the constraints of available resources, the Ministry encourages and facilitates the establishment of pre-schools by providing training for pre-school teachers. In the mid-1990s such training was conducted at two of the teacher training colleges. In addition the Ministry intends to assist in developing materials for use in pre-schools, and in monitoring standards in pre-schools. The number of children enrolled in early childhood centres and pre-schools is not clear, since these data are not currently collected by the Ministry of Education.

(b) Primary education

According to the 1995 Ministry of Education figures, there were 3,899 primary schools with a total enrolment of 1,506,349. The situation is far from being satisfactory as the net enrolment ratio stands at around 85 percent. About 17 percent of the pupils enrolled in primary schools are not of the official age group (7-13 years). While the progression rates within the primary cycle are generally higher among the urbanized provinces of Copperbelt and Lusaka, Northern, Eastern and North Western tend to have lowest progression rates – particularly in Grade 4 and 5 levels.

Table 1.1. Enrolments, teachers, and distribution of primary schools by province in Zambia

Province	Schools	Enrolments	Teachers		Total	Pupil/teacher ratio
			T*	U.T.*		
Copperbelt	279	301,525	6,493	961	7,454	40.4
Central	445	169,191	3,034	1,057	4,091	41.3
Lusaka	175	178,664	4,057	397	4,454	29.5
Southern	590	205,836	3,811	356	4,167	41.7
Northern	706	198,557	3,006	1,629	4,635	42.8
North Western	321	104,018	1,295	757	2,052	50.6
Luapula	341	113,592	2,233	754	2,987	38.0
Eastern	561	158,595	2,980	1,009	3,989	39.7
Western	478	123,494	2,607	1,075	3,682	31.8
Total	3,899	1,506,349	29,516	7,995	38,530	39.1

Source: Ministry of Education – Planning Unit.

* T stands for Trained teacher; ** U.T. stands for Untrained teachers.

From *Table 1.1* it may be seen that the distribution of teachers was not well balanced. At a value of 50.6, the pupil/teacher ratio in North Western province was the highest in Zambia. Moreover, the same province had the highest proportion of untrained teachers.

(c) Secondary education

In 1995 there were 178,073 pupils enrolled in secondary schools. This figure included pupils enrolled in Basic Schools (primary schools with Grades 8-9). Out of the 246 regular secondary schools offering secondary education 147 (59 percent) were government schools, and 44 percent were private schools (see *Table 1.2*). Progression rates from Grade 7 to Grade 8 (32.4 per cent) and from Grade 9 to Grade 10 (19.1 percent) were low. The gross enrolment ratio for government and grant-aided schools was 18.3 percent.

(d) Tertiary education

Enrolment figures in teacher training colleges (see *Table 1.3*) revealed certain disparities. Female students represented 43.9 percent of the total enrolment. For the two in-service teacher training colleges, namely Chalimbana and Lusaka college for teachers of the handicapped, the proportion of female students was even lower, representing only 29.1 percent and 36.2 percent, respectively. The proportions of female students enrolled at the secondary school teacher training colleges Copperbelt and Nkurumah were 37.6 percent and 25.6 percent, respectively.

Tertiary education is the final stage of the education structure. At this level the Ministry of Education has under its jurisdiction 14 primary teacher training colleges, of which 10 are pre-service primary teacher colleges and two are in-service primary colleges. There are also two secondary school teacher training colleges, as well as the University of Zambia and Copperbelt University where some of the teachers are trained.

Table 1.2. Enrolment and distribution of secondary schools by province (1995)

Province	Basic schools	Regular secondary schools			Total
		*GRZ	**G/Aided	***PVT	
Copperbelt	25	34	4	17	80
Central	14	15	3	9	41
Lusaka	27	13	6	17	63
Southern	109	13	17	9	148
Northern	65	10	4	–	79
North Western	44	14	1	1	60
Luapula	23	12	3	–	38
Eastern	59	21	2	1	83
Western	45	15	4	1	65
Total	411	147	44	55	657

Source: Ministry of Education – Planning unit.

* GRZ: Government of the Republic of Zambia; ** G/Aided: Grant aided; *** PVT: Private.

Table 1.3. Teacher training college enrolment by sex (1994)

College	Male	Female	Total	Percent female
Chalimbana	134	55	189	29.1
+Charles Lwanga	215	164	379	43.3
Chipata	222	193	415	46.5
*Copperbelt	166	100	266	37.6
D/Livingstone	171	134	305	43.9
Kasama	183	178	361	49.3
Kitwe	329	319	648	49.2
+Lusaka CTH	45	24	69	36.2
Malcom Moffat	165	157	322	48.8
Mansa	172	143	315	45.4
Mufulira	174	164	338	48.5
Mongu	154	153	307	49.8
*Nkurumah	294	101	395	25.6
Solwezi	156	133	289	26.0
Total	2,580	2,018	4,598	43.9

Source: Ministry of Education: Planning Unit.
+ In-service College;
* Secondary teacher training colleges.

Finance for education

The Education Sector receives finance from several sources: the education budget, parents' contributions, self-help inputs to the construction and rehabilitation of infrastructure, and income from production units at the primary- and secondary-school levels. The universities generate funds through shares in business and from consultancies. However, only expenditure from funds from the education budget is subject to budgetary procedures at the central level.

For the 1993, 1994, and 1995 budgets, the education sector allocation of the education budget (in K billion) was split between the two Ministries, as presented in *Table 1.4*.

It is important to note that funds allocated to education from the national budget have been low for more than two decades. The allocations have fluctuated around 4 percent of the Gross National Product (GNP), which is lower than for other countries in the region.

Table 1.4. Education budget allocation 1993-1995

Year	1993	1994	1995
	%	%	%
Total budget for the sector	26.9	49.3	67.0
Ministry of Education	23.5	44.3	61.0
Ministry of Science, Technology and Vocational Training	3.3	5.0	5.9
The percentage shares were:			
Ministry of Education	87.54	89.77	91.05
Ministry of Science, Technology and Vocational Training	12.46	10.23	8.95

Source: Ministry of Education – Financial Planning Section.

The distribution of the Ministry of Education's budget for the financial year 1995 was as follows: primary education: 41 percent; secondary education: 13 percent; and higher education (university and teacher training): 23 percent. The balance of the recurrent budget was allocated to administrative expenses and overheads. These allocations – within an already low proportion of GNP going to education – reflected a significant shift of resources away from primary education (where the enrolment rate was high) towards secondary education, where the pressure for admission has been increasing. Moreover, it is important to note that 70 percent of educational expenditure went to personnel emoluments and recurrent departmental charges, leaving only 30 percent of the allocation for capital projects.

Education policy concerns

The goals of Zambia's Education system include the following:

(a) Producing a learner capable of:

(i) being animated by a personally held set of civic, moral and spiritual values;

(ii) developing an analytical, innovative, creative and constructive mind;

(iii) appreciating the relationship between scientific thought, action, and technology, on the one hand, and sustenance of the quality of life, on the other;

(iv) demonstrating free expression of one's own ideas and exercising tolerance for other people's views;

(v) cherishing and safeguarding individual liberties and human rights;

(vi) appreciating Zambia's ethnic cultures, customs and traditions, and upholding national pride, sovereignty, peace, freedom, and independence;

(vii) participating in the preservation of the ecosystems in one's immediate and distant environments; and

(viii) maintaining and observing discipline and hard work as the cornerstones of personal and national development.

(b) Increasing access to education and life-skills training.
(c) Building capacity for provision of equality of educational opportunity.
(d) Creating conditions for effective co-ordination policies, plans, and programmes.
(e) Rationalizing resource mobilization and utilization.

These goals form the cornerstones of educational provision, and they form the basis for teaching and learning in schools and colleges.

Main education policy concerns for Zambia

The main education policy concerns for Zambia include the following:

(i) restructuring and decentralization of the entire education system;
(ii) improvement of quality and maintenance of educational services;
(iii) increasing the supply of teachers and rationalizing teacher deployment;
(iv) designing and implementing a comprehensive human resource development strategy at all levels in the education system;
(v) promoting access to education and training opportunities for all groups – especially vulnerable ones, such as primary-school children, women, etc.;
(vi) liberalizing the development, production, marketing, and distribution of educational materials; and
(vii) strengthening the planning, managerial, and administrative capacity of educational institutions.

In this context, the Ministry has been undertaking various programmes and activities aimed at addressing these policy concerns. A number of studies on gender and equity have been carried out and these have formed valuable input when implementing and refining education policy. However, a lack of key data towards the end of the primary cycle has been a major policy problem for Zambia because of the relatively low transition rates between Grades 7 and 8.

Discussion within the Ministry about these policy concerns resulted in a decision to mount a major educational policy research study. It was agreed that this study would need to be focused on the final year of primary schooling and, due to resource constraints, limited in its collection of pupil achievement data to one subject area (rather than many school subjects), and to a well-designed sample of pupils (rather than a full coverage, or census, of pupils). It was at this time that the Minister and Permanent Secretary became aware of the existence of a major educational policy research project that had just been completed in Zimbabwe (Ross (Ed.), 1995) as a co-operative venture between the International Institute for Educational Planning (IIEP) and the Zimbabwe Ministry of Education and Culture. Zambia was able to send a representative to attend the final sub-regional meeting for the Zimbabwe project, at which the results of the study were being discussed with the senior personnel of the Ministry (Moyo et al., 1993). Other countries in Southern Africa also became interested in this kind of study and the IIEP therefore responded by launching a sub-regional co-operative research project, with the participation of eight countries – including Zambia.

This consortium of Ministries of Education has become widely known as the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ). It was propitious for

Zambia that the target grade for SACMEQ's initial educational policy research project was Grade 6 – which was the penultimate grade of primary school. Furthermore, the subject matter that had been selected was reading. This also suited Zambia, since reading was considered to be the key subject in primary school because it was an essential prerequisite for successful learning in other subjects and subsequent learning at higher levels.

The aims of the SACMEQ study included a focus on the collection of baseline data that would provide an assessment of the conditions of schooling, and also several proposals to employ data analyses designed to determine the relative effect of educational input variables on achievement. The SACMEQ study has provided Zambia with an opportunity to examine various factors affecting reading achievement. Accordingly this activity addressed the wishes of the Zambian Government to put mechanisms in place for monitoring the quality of education.

The five main policy-related questions for SACMEQ's initial project

SACMEQ's initial policy research commenced with dialogue between the SACMEQ National Research Co-ordinators (NRCs) and the key decision-makers within Ministries of Education in eight countries of the Southern Africa sub-region. These discussions resulted in the preparation of a list of 'high priority' educational policy concerns which yielded five main policy-related questions.

(i) What are the baseline data for selected inputs to primary schools?

(ii) How do conditions of primary schooling compare with the Ministry of Education and Culture's own benchmark standard?

(iii) Have education inputs to schools been allocated in an equitable fashion?

(iv) What is the level of reading achievements of pupils at the upper-primary-schools level (middle basic) for the three main domains of reading literacy (narrative, expository and documentation)?

(v) Which education inputs to primary schools have most impact on pupil reading achievement at the upper-primary level?

The results of the study were expected to assist policy-makers and planners to make necessary interventions to improve the quality of learning in primary schools, which are the foundation for further education and training. The study also came at a time when Zambia was reforming its education system with a view to making it more efficient and cost effective in addressing issues of access, equity, and quality.

Chapter 2

The conduct of the study

Introduction

This chapter describes the way in which the study was conducted. The first part describes how the project was conceptualized by participating countries in conjunction with the International Institute for Educational Planning (IIEP) in Paris. The second part describes instrument development, sampling procedures, data collection, and data entry and cleaning. The last part describes the structure of the report.

Co-operation with the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ)

In 1991 the International Institute for Educational Planning worked with Zimbabwe's Ministry of Education and Culture to conduct a research study on 'Indicators of the Quality of Education.' The research reports which emerged from that study (for example, Ross and Postlethwaite (1992) and Murimba et al. (Eds.) (1994)) became widely respected in many countries of the Southern Africa sub-region because of their direct impact upon educational policy in Zimbabwe. This research study thus served as a springboard for further IIEP training and research activities. In 1992, using the Zimbabwe study as a model, a workshop on Data Building and Data Management was organized by the IIEP in Harare for educational planners and senior education officials from eight Ministries of Education in the sub-region (namely Botswana, Lesotho, Malawi, Swaziland, Tanzania (Mainland), Tanzania (Zanzibar), Zambia and Zimbabwe). The purpose of this workshop was to provide educational planners in the sub-region with the technical skills and research materials required to undertake a national survey of primary schools. During the workshop each participating country had an opportunity to examine and refine key policy questions.

In September 1993, another workshop to build on the knowledge gained in the 1992 workshop was organized in Harare. The focus of this workshop was on 'Data Processing for Policy Report Preparation', and gave practical training to participants on aspects of computer-based data processing, and report writing. Towards the end of the workshop, the participants felt that the knowledge gained was very useful and would benefit each of the countries in the sub-region. A proposal to launch a joint research initiative to monitor progress towards achievement of educational quality goals defined by the Jomtien Conference on Education for All in 1990 was drafted by the participants (Moyo et al., 1993). This initiative saw the birth of the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ).

The SACMEQ proposal was further developed at two subsequent meetings in Paris (July 1994) and in Harare (September 1994). The Harare meeting of September 1994 was attended by two newcomers to the Consortium: Kenya and Namibia.

It is noteworthy that what started as an educational policy research initiative in one country (Zimbabwe) has stimulated interest across the whole Southern Africa sub-region. This has led to the establishment of a 'sub-regional team' of educational planners and researchers that are now capable of applying educational policy research to influence policy change and general educational development in the sub-region.

Instrument development

During the Paris and Harare meetings the major focus of attention was on the development of data collection instruments for SACMEQ's initial educational policy research study. Draft test instruments and questionnaires were developed, and these were trial-tested by the national research co-ordinators in their respective countries. Blank tables for the summarization of results were also constructed. After trial-testing had been completed, the national research co-ordinators were invited to a meeting to finalize the data collection instruments. Based on the results of the pilot study, final versions of these instruments were produced. It is important to note that the different stages of instrument development were co-ordinated with IIEP support and that the trial tests and initial data analyses were conducted within the same period of time for each of the participating countries.

The instruments developed were: a pupil test of basic reading literacy; a pupil questionnaire; a teacher questionnaire; and a school head questionnaire.

For SACMEQ's initial project, reading literacy was defined as "the ability to understand and use those written language forms required by society and/or valued by the individual."

Such a definition was found to be general enough to accommodate the diversity of traditions and languages represented in the participating countries, but sufficiently specific to provide guidance for test construction. The domains of reading literacy that were included in the final test were as follows.

a) *Narrative prose*: continuous texts in which the aim was to tell a story, whether fact or fiction;
b) *Expository prose*: continuous text which was designed to describe, explain, or otherwise convey functional information or opinion to the reader; and
c) *Documents*: structural information which was organized in such a way that students had to search for, locate, and process selected facts rather than read every word of a continuous text.

Reading was chosen because it was felt that the ability to read was a major influence on pupil performance in all other school subjects. That is, a pupil who is able to read can more easily understand other school subjects. Writing ability was deliberately excluded from the definition due to the extra time and cost involved in its assessment. Therefore, only a minimum amount of writing was required of pupils throughout the testing process.

After examining the syllabi for Grade 6 across the SACMEQ countries, a common framework or 'blueprint' for a pupil reading test was constructed by preparing a 'skills by domain' table. The three domains have been described above. The seven reading skills were obtained after exhaustive discussion of the most important skills mentioned in the reading syllabus for each country. This table has been reproduced as *Table 2.1*. There were 21 cells in the table and, in order to ensure that the test provided a balanced coverage of the required reading skills and the main reading domains, the number of items allocated for each cell was in proportion to the emphasis given to it across the syllabi. This was a difficult task because it was necessary to restrict the total number of items in the test to around 60 so as to avoid problems of pupil fatigue. In fact, following extensive trial-testing and further analyses of the data from the final data collection, a final list of 59 items was prepared.

Across the different syllabi around one third of the emphasis was on 'Narrative' (and therefore 21 of the 59 items were allocated for this domain). Within 'Narrative' around one half of the emphasis in the syllabi was on 'Verbatim Recall' of information (and therefore 10 of the 21 items to 'Narrative' were allocated to the cell representing 'Narrative and Verbatim Recall').

Table 2.1. 'Skills by domain' blueprint for the pupil reading test

Reading skills	Reading domain			Total items
	Narrative	Expository	Documents	
Verbatim recall	10	14	0	24
Paraphrase concept	6	4	0	10
Find main idea	1	1	0	2
Infer from text	4	2	0	6
Locate information	0	0	9	9
Locate and process	0	0	6	6
Apply rules	0	2	0	2
Total items	21	23	15	59

It was decided to avoid the use of 'rotated tests', in which different forms containing sets of common items are administered to groups of pupils. Previous research carried out by the International Association for the Evaluation of Educational Achievement (IEA) indicated that there had been difficulties with the administration of rotated tests in some countries. Further, since this study was concerned with reading, and not with school subjects with many subskill areas (for example, mathematics or science), it was felt that 59 items would adequately cover the general construct of reading literacy.

Following the construction of the test blueprint, the reading passages and their accompanying test questions were prepared and subjected to extensive expert review. The passages were selected from items submitted by the SACMEQ countries. All items were in a multiple-choice format with four options per item. The possibility of including open-ended questions was considered and rejected because of financial constraints within countries for the training of scorers and for conducting the scoring.

For the trial testing in each country, a judgement sample of at least five schools and one intact class per school was drawn and tested. Item analyses were undertaken on each country's data as well as on the pooled data set for all countries. Where the point biserial correlation between the 'right' answer and total score was less than 0.20, then either the passage, the item stem, or the option answer was changed, or the item was dropped. Furthermore, if the point biserial correlation between a wrong answer and the total score was positive, then either the option was re-worded or the item was dropped.

The questions for the different questionnaires were designed to collect data in order to complete blank tables which had been prepared for the purpose of answering high-priority policy questions that had been identified for the study. The questions were then written and ordered in a systematic fashion within the different questionnaires. The questionnaires were trial-tested on pupils in the judgement sample schools. The Teacher Questionnaire was trial-tested on the reading teachers of the sampled pupils and the School Head Questionnaire on

the heads of the sampled schools. The distributions of responses were examined and, where necessary, the questions were revised. Interviews were also held with the teachers and school heads after they had completed their questionnaires in order to obtain their inputs concerning the clarity and relevance of each question. It should be noted that in one or two countries there were some questions considered not to be relevant for their education systems which were, nevertheless, retained for the sake of comparability among all of the SACMEQ countries.

Sampling

All sample designs applied in SACMEQ's initial project were selected so as to meet the standards set down by the International Association for the Evaluation of Educational Achievement (Ross, 1991). These standards require sample estimates of important pupil population parameters to be (a) adjusted by weighting procedures designed to remove the potential for bias that may arise from different probabilities of selection, and (b) have sampling errors for the key variables in the study that are of the same magnitude or smaller than a simple random sample of 400 pupils (thereby guaranteeing 95 percent confidence limits for sample estimates of population percentages of plus or minus 5 percentage points, and 95 percent confidence limits for sample estimates of population means of plus or minus one tenth of a pupil standard deviation unit).

The desired target population in Zambia was 'all pupils at the Grade 6 level in the eleventh month of the school year, 1995, who were attending registered government and grant-aided schools in the country'.

The number of schools and pupils in the desired, excluded, and defined population have been presented in *Table 2.2*. From the defined target population a probability sample of schools (with probability proportional to the Grade 6 enrolment in each school) was drawn. This resulted in a planned national sample of 165 schools and 3,300 pupils. This sample design was designed to yield an 'equivalent sample size' (Ross and Wilson, 1994) of 400 pupils – based on an estimated intra-class correlation (rho) for pupil reading test scores of around 0.30. In fact, after the rho was calculated for the reading scores, it was found to be 0.31 – which was about the same as had been expected

At the first stage of sampling, schools were selected with a probability proportional to the number of pupils who were members of the defined target population. To achieve this selection a 'random start – constant interval' procedure was applied (Ross, 1987). In several strata there were some schools with numbers of pupils in the defined target population that exceeded the size of the 'constant interval', and therefore each of these schools was randomly broken into smaller 'pseudo schools' before the commencement of the sampling.

At the second stage of sampling, a simple random sample of 20 pupils was selected within each selected school. Sampling weights were used to adjust for the disproportionate allocation of the sample across districts and also to account for the small loss of student data due to absenteeism on the day of the data collection.

Table 2.2. The numbers of schools and pupils in the Desired, Excluded, and Defined populations for Zambia

Stratum	Desired		Excluded		Defined	
	Schools	Pupils	Schools	Pupils	Schools	Pupils
Copperbelt	262	37,895	20	207	242	37,688
Central	422	22,309	87	421	335	21,888
Lusaka	188	27,528	24	103	164	27,425
Southern	573	25,461	103	692	470	24,769
Luapula	327	12,598	68	790	259	11,808
Northern	676	22,619	226	1,866	450	20,753
Eastern	310	8,798	107	897	203	7,901
North Western	294	7,209	149	1,110	145	6,099
Western	444	12,267	209	1,450	235	10,817
Zambia	3,496	176,684	993	7,536	2,503	169,148

Table 2.3. The planned and achieved samples of schools and pupils

Strata	Schools		Pupils	
	Planned	Achieved	Planned	Achieved
Copperbelt	25	25	500	409
Central	20	17	400	308
Lusaka	20	20	400	279
Southern	20	20	400	324
Luapula	15	11	300	203
Northern	20	20	400	375
Eastern	15	15	300	220
North Western	15	14	300	232
Western	15	15	300	208
Zambia	165	157	3,300	2,558

The planned sample was designed to contain 165 schools allocated across provinces, as shown in the first column of figures in *Table 2.3*. The achieved sample of schools was 157. The response rates for the sample have been recorded in *Table 2.3*. The percentage response for schools was 95.2 percent and that of pupils was 77.5 percent. The non-responding pupils were those who were absent on the day of testing. By province, this absenteeism varied from 2 to 12 percent.

A cautionary note

From *Table 2.3* it may be seen that there were major data losses due to non response at the national level and in particular regions. At the national level, data were obtained from only around three quarters of the pupils selected into the sample. At the regional level, data loss due to non response was particularly high in Luapula, where around one third of the pupils did not respond.

The source of this non response was not completely clear from the field records submitted by the data collectors. In Luapula four of the 15 schools selected into the sample either refused to participate or were not visited by the data collectors. Further data loss occurred in Luapula because 10 percent of the pupils in the remaining 11 schools were absent on the day of testing.

Major loss of data also occurred in other regions: Lusaka (30 percent loss), Western (30 percent loss), and Eastern (27 percent loss).

These major levels of data loss were far larger than had been set down as part of the quality control standards for SACMEQ's initial project. In the other four countries involved in the project, the response rate at the pupil level reached 90 percent or more.

It was beyond the scope of this report to conduct detailed analysis of the degree of bias that may have occurred in the Zambian data due to these high levels of non response. Therefore, the results presented in this report must be treated with caution until further analytical work has been undertaken by the Planning Division of the Zambian Ministry of Education.

Calculation of sampling errors

When data are collected using multi-stage sample designs from sources at different levels of data aggregation (pupil, teacher, school) a great deal of care needs to be taken in interpreting the stability of sample estimates of population characteristics. For this report, all data analyses were undertaken at the between-pupil level. That is, all data collected from teachers and school heads were disaggregated across the pupil data file before analyses were undertaken.

The interaction of sample design and level of data analysis required that extra caution be used in interpreting estimates obtained by using information from teachers or school heads. The sampling errors of estimates derived from these two 'disaggregated' sources were larger than the figures that were reported when using standard statistical software packages.

In the following chapters of this report the standard errors of sampling have been provided for all important variables. The calculation of these errors acknowledged that the sample was not a simple random sample – but rather a complex two-stage cluster sample that included weighting adjustments to compensate for variations in selection probabilities. The errors were calculated by using the PC-CARP software (Fuller et al., 1986). This software employs the Taylor's Series Approximation in order to calculate sampling errors and design effects. The sampling errors have been labelled 'SE' in the tables presented throughout this report.

For example, consider the percentages and means that have been reported in *Table 2.4*.

a) For Zambia overall the sample percentage of pupils who reached the minimum level of mastery on the reading test was 25.8 percent and the sampling error (SE) was 1.71 percent (see Table 2.4). These figures indicated that one could be 95 percent confident that the population percentage of pupils who reached the minimum level of mastery was within the following limits: 25.8±2 (1.71) percent. That is, between a high limit of 22.38 percent and a low of 29.22 percent.

b) For Zambia overall the sample mean for pupils on the 59-item test was 22.7 and the sampling error (SE) was 0.39 (see Table 2.4). These figures indicated that one could be 95 percent confident that the population mean for pupils on the 59-item test was within the following limits: 22.7±2(0.39). That is, between a high limit of 21.92 and a low of 23.48.

As mentioned above, by using the PC-CARP software, it was possible to establish the sampling errors for all variables presented in this report. It is extremely interesting to examine the values of the 'design effect' (Kish, 1965) and the 'effective sample size' (Ross, 1987) for a selection of these variables across the different levels of data acquisition. The design effect is an indicator of the increase in sampling error that occurs for a complex sample in comparison with a simple random sample of the same size. The effective sample size offers an alternative approach to describing the impact of the complexity of the sample design and the data level on the precision of sample estimates.

To illustrate, consider the design effect and effective sample size values for the variable describing minimum mastery level in *Table 2.4*. The design effect value of 3.93 indicated that the variance of the sample estimate of the mean on this variable was 3.93 larger than would be expected for a simple random sample of the same size. The effective sample size value of 650 showed that the complex sample of 2,558 pupils had a sampling error for this variable which was the same as would be obtained by employing a simple random sample of 650 pupils.

Now consider the values of the effective sample size for data collected at the teacher and school head level. These data were disaggregated across the 2,558 pupils – but notice that the effective sample size for these variables was much smaller. For example, the effective sample size for 'Teacher Academic Education' was 176 pupils, and the effective sample size for 'Pupil-Toilet Ratio' was 138 pupils. The main point made here is that the sampling errors of teachers and school heads were much larger than would be expected using the total number of pupils as the sample size in sampling error calculations.

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Table 2.4. The sampling errors (SE), design effects, and actual/effective sample sizes for selected variables at the pupil, teacher, and school head levels (for Zambia overall)

Variable	Mean	Percent	SE	Design effect	Sample size	
					Actual	Effective
At pupil level						
Minimum mastery level		25.8	1.71	3.93	2,558	650
Desirable mastery level		2.3	0.47	2.52	2,558	1015
Score on total test	22.7		0.39	4.95	2,558	517
Score on essential items	18.3		0.33	4.91	2,558	521
Average				4.08	2,558	676
At teacher level						
Teacher academic education	12.0		0.19	14.50	2,558 (295)	176
Total classroom resources	6.9		0.34	16.52	2,558 (295)	155
Available classroom library		24.6	3.33	15.23	2,558 (295)	168
Sex of teacher		39.3	3.70	14.74	2,558 (295)	174
Average				15.25	2,558 (295)	168
At school head level						
Pupil-toilet ratio	30.9		2.32	18.56	2,558 (157)	138
Total school resources	5.3		0.30	14.94	2,558 (157)	171
Available school staff room		17.9	3.26	18.51	2,558 (157)	138
Sex of school head		16.6	3.71	17.05	2,558 (157)	150
Average				17.27	2,558 (157)	149

Table 2.5. The sampling errors (SE), design effects, and actual/effective sample sizes for selected variables at the pupil, teacher, and school head levels (an example for Copperbelt Province)

Variable	Mean	Percent	SE	Design effect	Sample size	
					Actual	Effective
At pupil level						
Minimum mastery level		29.7	4.04	3.20	409	128
Desirable mastery level		2.3	0.95	1.64	409	249
Score on total test	23.4		0.98	4.66	409	88
Score on essential items	18.9		0.80	4.45	409	92
				3.49	409	139
At teacher level						
Teacher academic education	12.8		0.21	8.78	409 (99)	47
Total classroom resources	7.5		0.70	13.07	409 (99)	31
Available classroom library		40.1	8.75	13.04	409 (99)	31
Sex of teacher		56.0	7.73	9.03	409 (99)	41
				11.20	409 (99)	38
At school head level						
Pupil-toilet ratio	38.1		4.42	17.02	409 (25)	24
Total school resources	8.5		0.76	17.02	409 (25)	24
Available school staff room		36.0	9.79	17.02	409 (25)	24
Sex of school head		20.0	8.16	17.02	409 (25)	24
				17.02	409 (25)	24

Data collection

The total number of schools where testing took place was 157 and it was estimated that it would take one day in urban areas and two days in some of the rural areas for a total of about 200 test administrator days. The time allowed for the data collection was one week and so a minimum of 40 data collectors was required. Initially nine data collectors from nine provinces were called for training at a central venue in the month of October 1995. Following the training, each one of them became the team leader in his or her province to work with five more data collectors who he or she was to train. The Senior Education Officers (Planning) from the nine provinces of Zambia formed the team leaders for data collection. Three more data collectors were included based on the discretion of the Senior Education Officer (Planning). Thus, 45 data collectors were deployed and collected the data. The data collectors were assisted with transport cost and subsistence by the Ministry during the week of data collection.

The field work was guided by two detailed manuals which had been developed by the SACMEQ National Research Co-ordinators (NRCs): one NRC manual which defined precisely and sequentially what had to be done at every step in the conduct of the study; a second manual for data collectors which detailed every step that had to be taken from the minute the materials were received to the minute the materials were returned to the Ministry. The manual for the data collectors was used by the NRCs to conduct training sessions for the data collectors. Training sessions usually lasted one whole day, and no particular problems were encountered.

Data entry and data cleaning

All of the team leaders for the data collectors returned the instruments to the Ministry Headquarters (for the attention of the NRC), during the second week after the test administration. Once the instruments were returned to the Headquarters, three data entry staff within the Statistical Section of the Ministry entered the data, using the Data Entry Manager (DEM) a software programme developed at the IIEP (Schleicher, 1995). This software was adapted specifically for the entry of SACMEQ data. The data entry took six weeks and the data were sent on diskette to IIEP in March, 1996. It must be mentioned that at the time of data entry, the earlier version of the DEM structure files was used, and this caused major problems in cleaning the data at a later stage and reconstituting the structure of the files as they were meant to be.

Structure of this report

This report has been organized in such a way that *Chapter 3* presents the results of the baseline data of selected inputs to the primary schools, *Chapter* 4 presents the results on how the conditions in the schools compare with the Ministry's benchmarks, *Chapter 5* examines the extent to which the inputs had been allocated in an equitable fashion among and within provinces, and *Chapter 6* presents the reading test results. In each of *Chapters 3* to *6* policy suggestions based on the immediately preceding results have been presented. Finally, *Chapter 7* presents 'an Agenda for Action' which summarizes the policy suggestions. Each suggestion is classified in terms of low to high cost and short-term to long-term action.

Chapter 3

What are the baseline data for selected educational inputs to primary schools in Zambia?

Introduction

The aim of this chapter is to present some examples of baseline data for inputs to Zambian primary schools in order to establish a descriptive account of the pupils, their teachers, and their schools. These data are important for two reasons. The first is that they provide a 'context' for the analyses described later in this report. The second is that, over time, the levels and distributions of the data may well change. Therefore, when Zambia undertakes a similar Grade 6 reading survey in future, it will be possible to compare the extent to which such context variables have changed. High-quality data that address the two important areas of 'context' and 'levels and distribution' provide educational planners with a sound means of mapping the general evolution of the education system and also permit the identification of existing or emerging problems. The first educational policy suggestion to be presented in this report therefore looks to the future in acknowledgement of the importance of establishing data collections which can be used to study trends over time.

Policy Suggestion 3.1: The Ministry should strengthen its capacity to analyze and synthesize educational data at all levels. It should also plan to undertake follow-up surveys of the same target population covered during SACMEQ's initial project in order to examine changes in important educational indicators over time.

A note on the interpretation of the data analyses

Before presenting the results, two points should be stressed. The first is that the variables presented in this chapter represent a small subset of the large number of variables for which data were collected. A separate publication, containing descriptive statistics for all variables in the study, will be made available by the Ministry to interested readers.

The second point is that it is very important to interpret each statistic in association with its sampling error. It will be recalled from *Chapter 2* that the sample was drawn in order to yield standard errors of sampling for pupils in Grade 6 in Zambia such that a sample estimate of a population percentage would have a standard error of ±2.5 percent. For this level of sampling accuracy we can be sure that 19 times out of 20, the population value of a percentage lies within 5 percent of the estimate derived from the sample. The sampling errors for means are also given in the tables and the same principle applies for limits of two standard errors of sampling.

Where a percentage or a mean is presented for a sub-group of pupils (such as for district) then the standard error will be greater than for the sample as a whole. This occurs, in part, because the sample sizes for sub-groups are smaller than the total sample sizes. Had smaller standard errors for sub-groups been required, this would have increased the size of the total sample and also of the budget required to undertake much larger field data collection and data analyses.

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To illustrate, consider the first column of entries in *Table 3.1*. The average age of pupils in months at the time of the data collection has been presented separately for each province and Zambia overall. The standard error (SE) of each average has also been presented. For the first province, Copperbelt, the average student age was 165.8 months at the time of the data collection, and the standard error for this estimate was 1.32. That is, there were 19 chances in 20 that the population of Grade 6 pupils on the Copperbelt was 165.8 ±2(1.32). In other words, it can be said that we can be 95 percent confident that the population value was between 163.2 months and 168.4 months.

It is important to note that the value of the standard error for each estimate changed from province to province. This variation was caused by two main factors: differences in the distribution of pupils among schools within provinces, and the structure of the sample design within each province. The smallest standard error of 0.69 months occurred for the sample estimate of average age (171.6) for the whole population of Grade 6 pupils in Zambia. This result was to be expected, because the overall sample estimate was based on a much larger sample of schools and pupils than the corresponding estimate for an individual province.

In interpreting the values in *Table 3.1* and other tables throughout this report, it is important to remember that the percentages and means have been presented in terms of pupils. That is, pupils were the units of analysis – even though some variables described in this report referred to teachers and schools. Where a percentage for a variable that describes teachers has been presented, this percentage should be interpreted as 'the stated percentage of pupils were in schools with teachers having the particular characteristics'. Similarly, a percentage for a variable that describes schools should be interpreted as 'the stated percentage of pupils were in schools with the particular characteristic'.

Specific policy questions related to educational inputs

In order to guide the data analyses, the very broad educational policy question posed in the title of this chapter was divided into six more specific 'sub-questions'. These six questions were used to develop a structured response to the educational policy issues surrounding the main question.

a) What were the characteristics of Grade 6 pupils?
b) What were the characteristics of Grade 6 teachers?
c) What were the teaching conditions in primary schools?
d) What aspects of the teaching function designed to improve the quality of education were in place?
e) What was the general condition of the school building?
f) What level of access did pupils have to books?

What were the characteristics of Grade 6 pupils?

A wide range of information about pupil characteristics has been presented in *Tables 3.1 and 3.2*. Information has been listed concerning the age of Grade 6 pupils in months, the sex of these pupils, the number of books they had in their homes, the wealth of their homes (as measured by an Index of Possessions), the regularity of eating meals (as measured by an Index of Meals), the educational level of their parents, the use of the English language in their homes, the number of days that they were absent in the month before data collection, the percentage of pupils who were taking extra lessons, the extent to which the pupils were given homework, and, finally, the amount of grade repetition. The information in *Table 3.1* covers those background characteristics that were more 'home related', while the information in *Table 3.2* presents 'school related' information.

(a) Age of Grade 6 pupils

In principle, Zambian children are meant to enter the first grade of school when they are 7 years old. By Grade 6 these pupils should be 12 or 13 years old. In *Table 3.1* it can be seen that the average age of a Grade 6 pupil in Zambia during the first week of the eighth month of the school year was 171.6 months or 14 years and 3.6 months. The value of the age of Grade 6 pupils was calculated in months by comparing birth dates with the date of testing. That the result for average age was much higher than expected can be explained by the fact that most pupils enter Grade 1 when they are already over-age, due to an inadequate number of places in urban areas, and long distances to be covered in rural areas. There is also a very large group of repeaters in Grade 6. As can be seen in *Table 3.2*, about 45 percent of Grade 6 pupils had repeated at least one grade.

From these results we may conclude that many 'average Grade 6 pupils' in Zambia have spent over two extra years in the primary education system. There are major resource implications related to this situation, and there are important questions that should be asked by the Ministry in order to establish whether even one extra year of primary schooling provides educational benefits for the nation that can be justified in economic terms.

Policy Suggestion 3.2: The Planning Unit should undertake an investigation into the practice of grade repeating in Zambia in order to determine whether extra years of schooling can be justified on either educational or economic grounds.

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Table 3.1. The means and sampling errors for selected pupil background characteristics (home related)

Province	Age (months)		Sex (female)		Books at home (number)		Possessions at home (index)		Meals (index)		Parent education (index)	
	Mean	SE	%	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Copperbelt	165.8	1.32	44.5	4.21	31.1	5.00	6.7	0.24	10.8	0.14	8.3	0.21
Central	173.3	1.36	47.8	3.93	32.7	5.40	4.8	0.21	10.7	0.12	6.9	0.22
Lusaka	172.5	1.39	49.3	4.08	40.0	6.42	5.4	0.26	10.4	0.16	7.7	0.22
Southern	172.5	1.55	47.0	4.61	27.3	5.88	4.1	0.26	10.5	0.17	6.8	0.25
Luapula	172.7	3.63	41.4	9.51	–	20.96	3.8	0.44	9.7	0.38	6.9	0.50
Northern	175.9	1.96	43.3	5.00	28.9	6.25	4.0	0.29	9.9	0.20	7.0	0.26
Eastern	178.1	2.74	39.6	6.00	24.4	7.39	3.2	0.24	10.2	0.22	6.1	0.34
North Western	170.5	4.23	46.1	10.50	48.3	18.23	4.2	0.51	10.2	0.40	6.6	0.65
Western	170.5	2.41	48.9	6.26	25.6	7.64	3.6	0.29	10.6	0.22	7.3	0.38
Zambia	171.6	0.69	45.8	1.92	31.9	2.81	4.9	0.12	10.4	0.07	7.3	0.10

(b) Gender distribution

In *Table 3.1* the percentages of girls in Grade 6 have been given for the different provinces and the country as a whole. For Zambia, the gender distribution of pupils at Grade 6 level was not very well balanced, with 45.8 percent girls and 54.2 percent boys. While this difference could be attributed to sampling errors at the national and provincial levels, the situation for Luapula (39.6 percent girls) and Eastern (41.4 percent girls) warranted attention by the government.

Policy Suggestion 3.3: The Ministry should carry out an empirical and in-depth scientific assessment of gender imbalances in enrolments at the Grade 6 level, especially in Luapula and Eastern provinces.

(c) Books in the home

The number of books in a pupil's home can be regarded as a reading resource. From other studies (Elley, 1992) it has been found that, in most countries in the world, the availability of books for children to read is highly conducive to better levels of reading achievement. The Grade 6 pupils involved in this study were asked to indicate the approximate number of books in their home according to six categories: 1 = no books in the home; 2 = 1-10 books in the home; 3 = 11-50 books in the home; 4 = 51-100 books in the home; 5 = 101-200 books in the home; 6 = more than 200 books in the home.

The mid-point of each value range was used to estimate the total number of books in the home. For example, the value 1 was recorded as zero books, the value 2 was recorded as five books, and so on. The value 6 was recorded (as an estimate) to 250 books. From *Table 3.1*, it can be seen that the average Grade 6 pupils in Zambia came from a home where there were an estimated 31.9 books. North Western with an average of 48.2 and Lusaka with an average of 40 were the provinces with most books in the house. The value of this variable for Luapula has not been reported because of problems in data collection.

(d) Possessions in the home

The Grade 6 pupils were asked if they had the following 14 items in the home: daily newspaper, weekly or monthly magazine, radio, television set, video-cassette recorder, cassette player, telephone, refrigerator, car, motorcycle, bicycle, electricity, piped water, and a table to write on. For each item, pupils were given a score of 0 if they did not have the item and a score of 1 if they had the item. These scores were summed to form an 'Index of possessions' which reflected the material wealth of the home. A pupil from a home with none of these items received a score of 0 and a pupil from a home with all of these items received a score of 14.

The mean scores on this index have been presented in *Table 3.1*. The overall average for the country was 4.9, with quite large variations from a low of 3.2 in the Eastern province to a high of 6.7 in the Copperbelt province. These differences were large in comparison with the corresponding sampling errors, and this indicated real and substantial differences in relative poverty/wealth between provinces.

Whilst the impact of the Structural Adjustment Programme on households in Zambia is well recognized, these findings suggest that there are areas that are worse off and this information should be brought to the attention of the Minister of Finance and Economic Planning.

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(e) Index of regular meals

It has often been pointed out (Pollitt, 1990) that poor nutrition results in a lack of concentration and reduced perseverance in school. Regularity of meals was therefore seen as a factor likely to influence the acquisition of reading skills. The 'Index of Regular Meals' was a measure on a 12-point scale that assessed the number of meals that pupils reported they ate in a week. These meals were breakfast, lunch, and dinner. If a pupil ate no meals at all the score was 3, but if a pupil ate all meals each day the score was 12.

In *Table 3.1*, the mean scores for this index have been presented. The national mean was 10.4 with only small variations between provinces. On the whole, therefore, Grade 6 pupils were missing one or two meals a week. This lack of nutrition – although not severe on average – should nevertheless be of concern to the Ministry, and should prompt further investigation of its causes and consequences. In particular, a detailed analysis of the data should be undertaken to identify schools where scores on this index are substantially lower than the national average.

Policy Suggestion 3.4: The Ministry of Health should undertake a small study on the incidence and consequences of children not receiving regular meals.

(f) Parents' education

Questions were asked in the pupil questionnaire about the level of education that each parent had received. This information was coded as follows: did not go to school = 1; completed some primary school = 2; completed all primary school = 3; completed some secondary school = 4; completed all secondary school = 5; completed some education and/or training after secondary school = 6.

The answers for each child's mother and father were summed to provide an 'Index of Parent Education'. In *Table 3.1*, it can be seen that the average value for this index for Zambia was 7.3. Given the low sampling errors in each province, the variations – between 6.1 in Eastern province and 8.3 in the Copperbelt province – do represent real differences in the average parental education.

All of these factors are widely recognized as being of major importance to pupil achievement and therefore their impact upon the reading performance of pupils will be taken up in more detail in a later chapter.

The general trend of these values across the provinces mirrors the trend observed above for the number of possessions reported in the home. Eastern province also had the lowest number of books at home, and the lowest proportion of girls and the highest average age; Copperbelt province also had the highest score on the meals index and the lowest average age. These factors probably have a cumulative effect on the educational performance of pupils.

Policy Suggestion 3.5: The Ministry should establish a Task Force to examine options for taking educational action to compensate for the limited educational resources (books, possessions, parent education) available in some homes.

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(g) Speak English at home

English is the medium of instruction in Zambian schools. However, outside school several languages are spoken. The reading test used in this study was in English, and therefore it was expected that the extent to which pupils had an opportunity to speak English outside of the school would influence their reading performance on a test in English.

In *Table 3.2* it may be seen that the percentage of pupils who answered that they spoke some English at home (sometimes, often, or all of the time) was 75.3 percent for Zambia. There was, however, variation across provinces from just over 67 percent in Western province and 69 percent in Northern and Southern provinces, to nearly 90 percent in Eastern and North Western provinces. The Eastern province was significantly higher than the national average.

Policy Suggestion 3.6: The Ministry should give a high priority to intensifying in-service training through the AIEMS (Action for Improvement of English, Mathematics, and Science subjects) project, especially in Northern, Western, and Southern provinces. It should also consider the allocation of teachers with an excellent command of English to Northern, Western, and Southern provinces in order to address the situation of the relatively lower percentages of Grade 6 pupils who are from homes where English is spoken.

(h) Days absent in previous month

In many countries absenteeism is a problem. It is also likely that those pupils who are absent more often from school will learn less. What was the picture in Zambia? The pupils were asked how many days they had been absent in the month before they were tested. As can be seen from *Table 3.2* the average number of days of absenteeism was 2.2 for Zambia as a whole. This varied from a relatively low value of 1.3 in Western to 2.9 in Luapula province. Given the number of national and other holidays, this latter figure represents nearly one day in seven.

The 'self-reported' rate of absenteeism was obtained from those pupils who were attending school on the day of data collection for this study. Around 22 percent of Grade 6 pupils in Zambian schools were absent on the day of the data collection, and although this figure could have included pupils who would usually have been in school, it is also possible that it included a large proportion who were absent from school on a regular basis.

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Table 3.2. The percentages, means, and sampling errors for selected pupil background characteristics (school related)

Province	Speak English		Days absent		Extra lessons		Homework		Repetition	
	%	SE	Mean	SE	%	SE	%	SE	%	SE
Copperbelt	79.2	3.44	2.4	0.27	39.3	4.14	16.8	3.88	33.0	3.99
Central	70.6	3.58	2.1	0.30	43.3	3.90	23.6	3.93	45.5	3.92
Lusaka	78.9	3.33	2.3	0.26	49.6	4.08	35.5	3.66	43.2	4.04
Southern	68.9	4.28	2.2	0.26	35.8	4.43	22.9	4.37	44.9	4.60
Luapula	79.9	7.75	2.9	0.53	54.4	9.62	29.6	8.49	51.3	9.65
Northern	68.8	4.67	2.3	0.32	50.1	5.04	12.4	4.99	62.0	4.90
Eastern	89.5	3.76	1.9	0.33	29.6	5.60	10.8	6.12	51.0	6.13
North Western	86.9	7.09	1.6	0.63	57.4	10.41	29.0	10.29	43.6	10.44
Western	67.3	5.88	1.3	0.33	47.9	6.26	23.8	5.77	53.4	6.25
Zambia	75.3	1.66	2.2	0.12	44.1	1.91	22.6	1.83	45.4	1.92

(i) Extra lessons

There is a tradition in Zambia for pupils to take extra lessons in school subjects outside of school hours. At times the extent of this practice has caused major concerns with respect to questions such as: Where should this activity take place? Should teachers on the government payroll be obtaining financial benefits for this activity? Are some pupils disadvantaged because they are unable to participate in this activity?

Given the established nature of this practice, the high percentage of pupils answering that they were taking extra tuition was not a surprise. The overall average percentage for Zambia was 44.1 percent, with substantial variation from under 30 percent in Eastern province to nearly 58 percent in North Western. However, given the sampling error, only the score for Eastern province was significantly lower than the national average.

If these figures continue to grow in Zambia, then the Ministry needs to begin to examine the potential detrimental effects that this may have on normal schooling. If teachers are able to earn substantial amounts of tax-free income in addition to their government salary via out-of-school tuition, then what incentive is there for them to do a sound job of covering the official curriculum within school hours?

Policy Suggestion 3.7: The Ministry should meet with teacher union representatives to discuss the 'conflict of interest' that arises from the current practice of allowing the teachers to receive high financial rewards for teaching their own pupils as private clients outside of school hours.

(j) Homework

The pupils were asked how often they received homework. The possible responses were: I do not get any homework; once or twice per month; once or twice per week; and most days of the week. The percentages of pupils that reported that they received regular homework (that is, 'on most days of the week') have been presented as the penultimate variable in *Table 3.2*.

It can be seen that the overall percentage of pupils reporting that they received regular homework was rather low at 22.6 percent. The variation between provinces was quite large for this variable – with quite low percentages, around 10 percent, for Eastern and Northern provinces up to the highest value of around 35 percent in Lusaka.

A detailed analysis of pupil responses showed that, at the national level, over one third of Grade 6 pupils were either getting homework once or twice a month or not at all. Given the acknowledged importance of homework at the Grade 6 level of education – because of the National Grade 7 Composite Examination – this situation needs urgent attention with a view to establishing a national policy on homework.

Policy Suggestion 3.8: The Inspectorate should ensure that the national policy on homework for Grade 6 is applied by all teachers – giving particular attention to the existing arrangements for homework in Central and Eastern provinces.

(k) Grade repetition

The issue of grade repetition was discussed in the context of an analysis of the average age of Grade 6 pupils. In the final set of figures in *Table 3.2* the percentages of Grade 6 students who repeated at least one grade have been listed for Zambia and its nine provinces. The percentages for provinces showed large variations, from a low value of 33.0 percent on the Copperbelt to a higher value of 62.0 percent in Northern province.

A separate analysis of the reading-literacy levels of the pupils who had repeated a grade showed some very interesting results. To illustrate, about 40 percent of even the top 25 percent of readers had repeated a grade. In other words, almost half of the best readers in Zambia had repeated a grade. This result could imply that grade repetition had resulted in a dramatic improvement in the reading performance of these pupils – or that these able pupils had been wasting their time by repeating grades. Whatever the explanation, there is certainly a need for more information about this aspect of the Zambian primary education system. For example, it would be very interesting to establish whether the identification of pupils for grade repetition bears any relationship to objective measures of pupil performance.

Policy Suggestion 3.9: The Planning Unit should undertake a study (a) to examine the procedure used by schools to identify pupils for grade repetition, and (b) to test whether these procedures are being applied in a 'rational' manner (in the sense that they are linked to valid measures of pupil performance).

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What were the characteristics of Grade 6 teachers?

Several important characteristics of teachers were also measured. These were concerned with: age, gender, academic qualifications, professional qualifications, years of teacher experience, and participation in in-service courses. The results of the analysis of these variables have been reported in *Table 3.3*.

(a) Age of teachers

The average age of teachers who taught Grade 6 pupils in the different provinces and in Zambia as a whole have been presented as the first column in *Table 3.3*. The average age of teachers who taught Grade 6 pupils was 31.8 years. This did not vary a great deal across the provinces – the youngest average of 28.4 years was in Luapula and the oldest average of 32.9 years was in Copperbelt.

(b) Gender of teachers

Overall 39.3 percent of Grade 6 pupils were taught by female teachers. This teacher characteristic varied across provinces – with only about 15 percent of Grade 6 pupils taught by female teachers in Luapula and over 55 percent on the Copperbelt. These differences were considerably larger than the sampling error and reflect real variations between the provinces. There would appear to be no available information to explain these major differences and therefore this matter should be subjected to a review by the Staffing Office.

The result coincides with the distribution of all teachers in primary schools (36 percent female) reported in the Ministry of Education Statistical Report of 1995.

Policy Suggestion 3.10: The Ministry should request the Staffing Office to review the staffing procedures related to gender balance in the distribution of teachers across provinces.

(c) Years of academic education

The teachers were asked to record the years (excluding grade repetition) of academic education (for example, primary, secondary, and post-secondary education) that they had received. From *Table 3.3*, it can be seen that the average Grade 6 pupil in Zambia was taught by a teacher who had received 12 years of education in the form of 7 years of primary education, followed by 5 years of secondary education.

There was little variation among the provinces, although the average years of academic education in Western province was 10.7 years, which meant that there were some teachers who had not completed secondary education, and in Eastern province it was 13.2 years, implying that some teachers had gained post-secondary qualifications.

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Table 3.3. The means, percentages, and sampling errors for selected teacher background characteristics

Province	Age (years)		Sex (female)		Academic education (years)		Teacher training (years)		Teacher experience (years)		In-service courses (number)	
	Mean	SE	%	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Copperbelt	32.9	1.37	56.1	7.73	12.8	0.21	1.5	0.15	9.4	1.33	0.39	0.20
Central	31.3	1.48	26.9	10.17	11.6	0.67	1.0	0.23	5.9	1.27	0.71	0.52
Lusaka	33.2	1.74	44.6	10.95	11.2	0.64	1.2	0.21	6.6	1.73	0.57	0.36
Southern	31.0	1.51	49.2	11.16	11.8	0.59	1.1	0.23	6.4	1.48	0.04	0.06
Luapula	28.4	1.73	15.6	6.59	12.6	0.28	0.7	0.22	4.6	1.53	0.64	0.25
Northern	32.2	1.68	23.7	9.50	12.4	0.52	1.2	0.22	6.6	1.34	0.25	0.16
Eastern	30.9	1.75	26.7	11.84	13.2	0.26	1.3	0.25	5.5	1.15	0.00	0.00
North Western	30.3	2.11	41.7	13.41	12.5	0.96	1.3	0.28	3.9	1.93	0.43	0.35
Western	31.5	2.13	33.3	12.57	10.7	0.67	1.1	0.26	5.5	1.87	0.20	0.11
Zambia	31.8	0.59	39.3	3.71	12.0	0.19	1.2	0.08	6.7	0.55	0.38	0.10

(d) Years of teacher training

In Zambia, all primary-school teachers should have attended at least a two-year teacher training programme before commencing their careers. The average number of years of teacher training for each province has been presented in *Table 3.3*. For Zambia, overall, it was 1.2 years with a range of 0.7 years in Luapula to 1.5 years in Copperbelt. It should also be noted that the average was substantially less than the official training period because of the high percentage of untrained teachers. At the national level over a third of Grade 6 pupils were being taught by teachers who had received no teacher training at all.

The teachers of Grade 6 pupils in Zambia were comparatively younger than teachers in other countries participating in the SACMEQ project. There could be many factors which explain this situation, such as low life expectancy, high attrition rates, and age structure of the population. However, it should be noted that the Ministry has a policy of assigning lower grades (1 to 4) and Grade 7 classes to the more experienced teachers. Further, in the recent past a number of ambitious experienced primary-school teachers have upgraded their professional qualifications, and this makes it possible for them to teach Upper Basic (Grades 8 and 9) which is more prestigious and rewarding.

Policy Suggestion 3.11: The Ministry should prepare, and commence work on, a long-range plan to reduce the numbers of untrained teachers at the Grade 6 level.

(e) Years of teaching experience

The average number of years of teaching experience for Grade 6 teachers has been given in the penultimate column of the set of figures in *Table 3.3*. The overall average for Zambia was 6.7 years, with quite a large variation from 3.9 years in North Western to 9.4 years in the Copperbelt province.

(f) Number of in-service courses attended

The Grade 6 teachers were asked to report the number of in-service courses that they had attended during their teaching careers. The average for the whole country was extremely low at 0.38. From *Table 3.3* it may be seen that participation in in-service activities was low in all provinces – in fact it was zero in Eastern province. A frequency distribution on this variable generated for Zambia overall showed that 85 percent of Grade 6 pupils were being taught by teachers who had *never* attended an in-service course. Given the discussion above concerning the large number of untrained teachers in the Zambian education system, the lack of a systematic and widespread programme of in-service training is a major concern.

Policy Suggestion 3.12: The Ministry should, as a matter of urgency, establish a systematic programme of in-service training which is targeted towards improving the teaching skills of untrained Grade 6 teachers.

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What were the teaching conditions in primary schools?

In all countries that participated in SACMEQ's initial project there was a great deal of interest in the resources available to teachers for their teaching and the availability of basic supplies of classroom furniture. In order to assess these two important dimensions, the Grade 6 teachers were given a checklist of items which they used to indicate the availability of a range of classroom resources. The checklist contained eight items covering teaching materials and five items covering classroom furniture. These items and the percentages of Grade 6 pupils in classrooms with each of these items have been listed in *Table 3.4*.

(a) Teaching materials and classroom furniture

It had been hoped that certain fundamental teaching resources (such as a bookshelf, chalk, or a map of Zambia) would be found in most Grade 6 classrooms. This was not the case, with nearly 30 percent of pupils in classrooms without chalk (or a viable chalkboard) or a map of Zambia, and over 80 percent without a bookshelf.

Moreover, over 40 percent did not have an English dictionary and over three-quarters of the Grade 6 pupils were in classrooms that did not have a classroom library or book corner. These are very disturbing findings because a number of research studies have shown that increasing pupil access to books by making them 'closer' to ordinary daily classroom activities is a key factor in improving pupil literacy levels (Postlethwaite and Ross, 1992).

The teacher checklist responses concerning each set of resources were combined to form two scales: a Teaching Materials Index (constructed by adding up the number of teaching material items that each teacher reported out of a total of eight items) and a Classroom Furniture Index (constructed by adding up the number of items of classroom furniture that each teacher reported out of a total of five items). The mean scores for these indices across provinces, and for Zambia overall have been reported in *Table 3.5*.

The average for Zambia was 4.9 for the Index of Teaching Materials and 2.0 for the Index of Classroom Furniture. Both of these averages were very low. There was some variation among provinces, with an average of only 3.4 teaching material items in Lusaka, but 6.1 items in Luapula, both of which values were noticeably different from the national average. There was less variation in the Index of Classroom Furniture.

Policy Suggestion 3.13: The Ministry should undertake a national audit concerning the availability of basic teaching materials and classroom furniture, and then prepare a set of strategies involving partnerships with donor agencies, community 'self-help' groups, etc. to address major shortages.

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Table 3.4. Percentage of Grade 6 pupils in classrooms with selected teaching materials and classroom furniture

Item	Percentage with item	SE
Teaching materials		
Chalk	71.8	3.47
A wall chart of any kind	59.9	3.78
A map of Zambia	70.6	3.51
A map of Africa	69.1	3.56
A world map	67.0	3.63
A classroom library or book corner	24.7	3.33
An atlas	66.2	3.65
An English dictionary	58.7	3.80
Classroom furniture		
A usable chalkboard	74.9	3.34
A cupboard	20.4	3.11
One or more bookshelves	19.5	3.05
A teacher table	41.1	3.79
A teacher chair	43.4	3.82

Table 3.5. Means and sampling errors for the Index of teaching materials and the Index of classroom furniture

Province	Teaching material index		Classroom furniture index	
	Mean	SE	Mean	SE
Copperbelt	5.3	0.45	2.3	0.25
Central	4.4	0.73	1.8	0.36
Lusaka	3.4	0.64	1.8	0.34
Southern	5.2	0.64	2.0	0.39
Luapula	6.1	0.56	1.9	0.35
Northern	5.6	0.57	2.4	0.32
Eastern	6.0	0.43	2.3	0.29
North Western	4.8	0.86	1.5	0.44
Western	3.9	0.78	1.4	0.42
Zambia	4.9	0.23	2.0	0.12

(b) Pupils' books and materials in the classrooms

Without a textbook, an exercise book, a notebook, a pencil or a ballpoint pen, and so on, it is very difficult for pupils to learn. Information has been presented in *Table 3.6* and *Table 3.7* concerning the readers/English textbooks the pupils had in the classroom, and other materials that they had such as exercise books, notebooks, pencils, rulers, pencil erasers, and a pen.

In *Table 3.6*, it can be seen that in Zambia as a whole, over 86 percent of pupils had neither their own English reader nor their own English textbook. The situation was substantially worse in Central and Copperbelt provinces, where only 4 percent and 7 percent of pupils, respectively, had either their own English Reader or English textbook. In relative terms, the situation was somewhat better in the North Western province, where nearly 35 percent had either an English reader or an English textbook.

The sharing of English readers and English textbooks was widespread in the schools. However, given the importance of this basic learning resource, every effort should be made to ensure that each Grade 6 pupil has his/her own copy to use both at school and at home.

Table 3.6. Percentage of pupils reporting lack of *basic* learning materials and equipment (reader/textbook, exercise book, notebook)

Province	Reader/textbook		Exercise book		Notebook	
	%	SE	%	SE	%	SE
Copperbelt	93.1	2.14	23.0	3.57	36.8	4.09
Central	95.9	1.57	4.0	1.55	35.0	3.75
Lusaka	87.6	2.69	56.3	4.05	75.9	3.49
Southern	79.1	3.76	21.2	3.78	56.0	4.59
Luapula	86.3	6.65	8.4	5.36	44.6	9.60
Northern	82.5	3.83	17.2	3.81	45.7	5.03
Eastern	81.4	4.77	9.5	3.60	69.3	5.66
North Western	65.3	10.02	22.1	8.74	68.4	9.79
Western	84.6	4.52	35.7	6.00	78.9	5.11
Zambia	86.7	1.31	24.1	1.65	52.7	1.92

An exercise book was defined as 'a book for writing that is marked by the teacher' and a notebook as 'a book that is used for writing and is not marked by the teacher'. The figures presented in Table 3.6 illustrated that nearly a quarter of pupils in Zambia claimed that they did not have an exercise book. However, this varied widely from Central, Luapula and Eastern provinces, where less than 10 percent of Grade 6 pupils claimed to have no exercise book, to Lusaka, where more than half claimed to have no exercise book.

More than half of the Grade 6 pupils reported that they did not have a notebook. The situation varied across the regions from just over a third in Central and Copperbelt provinces to over three quarters in Lusaka and Western provinces.

From *Table 3.7* it may be seen that over a third of pupils overall reported that they did not have a pencil – although this value varied widely from 10 percent in Central province to over 60 percent in Lusaka. About the same proportion overall did not have a ballpoint pen, with a similar pattern of provision as for pencils across the provinces.

When the availability of pencils and pens was examined using a cross-tabulation it was discovered that 27 percent of Grade 6 pupils had neither a pencil nor a pen to use in classroom lessons.

Even higher proportions – nearly 60 percent – reported that they did not have a ruler or eraser. These proportions also varied, but not so widely, with over half the pupils in Central province reporting that they had a ruler and an eraser, but less than a third in Lusaka for each of the items.

In general, the results presented in *Tables 3.6* and *3.7* showed that far too many pupils in Zambia lacked basic supplies and equipment. If pupils do not have basic learning materials and readers/textbooks then there is little chance that they can engage in effective learning.

Policy Suggestion 3.14: The Ministry should undertake a national audit concerning the availability of basic pupil learning materials and then ask the Supplies Unit to specify the steps to be taken to improve this component of the educational environment.

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Table 3.7. Percentage of pupils reporting *lack* of basic learning materials and equipment (pencil, ruler, eraser, pen)

Province	Percentage of pupils reporting lack of items							
	Pencil		Ruler		Eraser		Pen	
	%	SE	%	SE	%	SE	%	SE
Copperbelt	31.7	3.95	62.2	4.11	48.3	4.24	32.0	3.95
Central	10.4	2.40	47.4	3.93	49.9	3.93	7.1	2.02
Lusaka	61.2	3.98	67.9	3.81	71.0	3.70	58.5	4.02
Southern	26.6	4.08	51.7	4.62	51.4	4.62	24.2	3.96
Luapula	44.4	9.60	61.6	9.39	61.7	9.39	35.4	9.23
Northern	41.9	4.98	57.3	4.99	62.4	4.89	38.2	4.90
Eastern	25.0	5.31	59.9	6.01	57.5	6.06	17.8	4.69
North Western	26.1	9.25	52.0	10.52	42.1	10.40	28.7	9.52
Western	45.6	6.24	67.2	5.89	70.3	5.73	41.8	6.18
Zambia	35.5	1.84	58.9	1.89	56.9	1.91	32.8	1.81

What aspects of the teaching function that are designed to improve the quality of education were in place?

A number of variables were examined with respect to this important aspect of the educational environment. These were related to teaching practices that were known from previous research to influence pupil learning, with the teachers' perceptions of the inspectors, and with the teachers' views on job satisfaction. Four issues in particular were examined: frequency of testing pupils, regularity of meetings with parents, perceptions of the professional performance of the Inspectorate, and perceptions of what teachers believed were the main factors that impacted upon job satisfaction. The results of these analyses have been presented in *Tables 3.8* to *3.12*.

(a) Frequency of testing

Overall, 41.2 percent of Grade 6 pupils had teachers who stated that they gave their pupils a written test in reading one or more times per week. However, it was surprising to note that 14.7 percent of pupils were never given a written test. In Central and Lusaka provinces nearly 30 percent of pupils were never given a written test, and around 20 percent in North Western, Southern and Western provinces.

The last two categories of the variable described in *Table 3.8* (testing two or three times per month and testing once or more per week) can be combined to provide a measure of the incidence of 'regular testing'. Overall, for Zambia, 61.3 percent of Grade 6 pupils in Zambia were tested on a regular basis. In Southern and Northern provinces the proportion was less than half, but over 80 percent of pupils in the Copperbelt province were tested regularly.

The wide variation of these percentages across provinces was quite puzzling, and this suggests the lack of a common testing policy across Zambia. This situation certainly needs attention and should be looked at in detail by the Inspectorate. Grade 6 is the penultimate year of primary school and it warrants a coherent national policy on classroom testing.

Policy Suggestion 3.15: The Inspectorate should establish a common policy on the regularity of giving written tests to Grade 6 pupils so that there is greater uniformity across provinces in this important area of educational endeavour.

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Table 3.8 The percentages and sampling errors for the frequency of giving a written test to pupils

Province	Frequency of testing											
	No test		Once a year		Once a term		Two or three times per term		Two or three times per month		Once or more per week	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Copperbelt	0.4	1.03	0.0	0.0	4.1	3.23	12.6	5.41	27.6	7.29	55.2	8.11
Central	29.4	10.86	1.2	2.60	0.0	0.00	9.4	6.96	16.8	8.91	43.2	11.81
Lusaka	28.3	9.23	0.0	0.00	7.5	5.39	8.4	5.68	14.7	7.25	41.0	10.07
Southern	20.0	8.97	0.0	0.00	0.0	0.00	37.3	10.85	13.1	7.57	29.6	10.24
Luapula	9.1	7.01	0.0	0.00	1.4	2.86	31.8	11.35	16.4	9.03	41.4	12.01
Northern	5.0	4.94	5.0	4.94	25.0	9.82	15.0	8.09	15.0	8.09	35.0	10.81
Eastern	0.0	0.00	0.0	0.00	13.3	8.81	17.9	9.95	22.1	10.77	46.7	12.95
North Western	21.4	11.14	0.0	0.00	0.0	0.00	11.7	8.73	35.7	13.01	31.2	12.59
Western	20.0	10.59	3.3	4.73	6.7	6.62	6.7	6.62	34.1	12.55	29.3	12.05
Zambia	14.7	2.73	1.0	0.77	6.3	1.87	16.6	2.87	20.1	3.09	41.2	3.80

(b) Meeting parents

Postlethwaite and Ross (1992) have shown that, in many countries, the more that the school head and teachers had contact with parents, the more effective the school was in promoting the reading achievement of pupils. That is, schools where school heads and teachers had contact with parents scored better than could be expected after taking due account of the socio-economic background of their pupils. The results concerning the frequency of teacher meetings for Grade 6 pupils in Zambia have been presented in *Table 3.9.*

Table 3.9. Percentages and sampling errors for frequency of teacher meetings with parents

Province	Never		Once per year		Once per term		Once (+) per month	
	%	SE	%	SE	%	SE	%	SE
Copperbelt	6.3	3.96	6.6	4.05	65.3	7.76	21.8	6.73
Central	36.8	11.49	30.9	11.01	23.5	10.11	8.8	6.75
Lusaka	41.1	10.08	1.2	2.23	49.4	10.24	8.3	6.58
Southern	48.7	11.02	10.0	6.73	35.0	10.70	6.3	5.45
Luapula	25.5	10.62	13.2	8.25	51.2	12.18	10.2	7.38
Northern	22.5	9.47	25.0	9.82	27.5	10.12	25.0	9.82
Eastern	46.7	12.95	13.3	8.81	33.3	12.23	6.7	6.49
North Western	50.0	13.58	0.0	0.00	18.4	10.53	31.6	12.63
Western	34.1	12.55	6.7	6.62	39.3	12.93	20.0	10.59
Zambia	30.6	3.55	12.2	2.52	42.4	3.81	14.8	2.74

Typically, in Zambia, teachers meet the parents once a term, although there was 30 percent of pupils taught by teachers who *never* met parents and a further 12 percent only once a year. It is possible that the better pupils may be more likely to have parents that are motivated to meet with their teachers and the weaker pupils may require more teacher-parent/guardian meetings. However, it is noteworthy that about half the pupils had teachers in Southern, North Western and Eastern provinces reporting that they never met parents, compared to only 6 percent in Copperbelt.

These wide variations in practice occurred both within and between provinces. This variation suggests a lack of coherent policy on the frequency of teacher meetings with parents. It is important for the Ministry to give operational guidelines on the principle of partnership as enunciated in the policy document. Schools and teachers should be made aware of their obligation to bridge the parent-teacher gap that in the past has been large

Policy Suggestion 3.16: School heads should be encouraged to ensure that their Grade 6 teachers meet with parents on a regular basis to discuss the progress of pupils.

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(c) Teachers' perception of the role of inspectors

The changing role of the Inspectorate has become an important issue in many education systems. The teachers in this study were given an opportunity to describe their perceptions of the impact of the inspectors on their work. Their responses have been tabulated in *Table 3.10*.

The teachers' responses in this area were tabulated under three broad headings that described the main dimensions of the work carried out by inspectors: 'Pedagogical role', 'Critical versus advisory role', and 'Professional development role'. Apart from the fact that almost one in six thought the inspectors came to criticize, it can be seen from the results that most of the teachers had fairly 'positive feelings' about the inspectors. The only serious exceptions appeared to be that a third thought that the inspectors were not helpful in explaining the curriculum.

There was also some dissatisfaction with the second dimension of the 'Professional development role'. Whilst three quarters of Grade 6 pupils had teachers who considered that the inspectors encouraged contact with other teachers, only a little more than half agreed that the inspectors provided information that would assist with their professional development.

In summary, there were many important issues in these results for the Inspectorate. In some areas the inspectors were perceived to be performing well, while in other areas their performance was voted as only fair.

Policy Suggestion 3.17: The Inspectorate should hold a conference to discuss teachers' perceptions of their role and to explore avenues for improving their performance with respect to explaining the curriculum and to providing more information to teachers about professional self-development opportunities.

Table 3.10. Teachers' perceptions of the role of the Inspectorate

Aspect of the role	Percentage of teachers agreeing	
	%	SE
Pedagogical role		
Bring new ideas	77.5	3.22
Clarify educational objectives	81.3	3.01
Recommend new teaching materials	75.4	3.32
Contribution to classroom teaching	75.1	3.33
Explain curriculum	67.6	3.61
Suggest improved teaching methods	78.4	3.17
Critical v. advisory role		
Comes to criticize	16.0	2.83
Comes to advise	83.7	2.85
Professional development role		
Encourage professional contacts with other teachers	75.2	3.33
Provide information for teacher self-development	56.2	3.83

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(d) Sources of teacher satisfaction

The motivation of teachers is a critical issue for any programme designed to improve the quality of education. In the SACMEQ countries there has been considerable interest in this issue – especially concerning those factors that contribute most to job satisfaction. It is widely acknowledged that satisfied teachers will tend to work harder for the benefit of pupils and are less likely to leave the teaching profession.

Teachers in this study were given an opportunity to respond to 13 possible reasons for satisfaction with their jobs. The 13 reasons have been grouped under five headings in *Table 3.11*: living conditions, school facilities/equipment, relationships with others, and career advancement.

Many reasons were thought of as being of roughly equal importance, with between 65 percent and 80 percent thinking most reasons to be 'very important'. The only exception was distance travelled to school, where around 55 percent thought that was very important. This latter is probably because most teachers in Zambia had a house provided by the education system near to the schools where they taught.

The four reasons that were rated highest, at around 79 percent, were: the availability of teacher housing, good relations with the community, quality of classroom supplies, expanded opportunities for promotion, and quality of classroom furniture. The high value for 'good relations with the community' was pleasing, given the large amount of research showing that this is an important factor in the smooth functioning of schools (Postlethwaite and Ross, 1992).

Table 3.11. Percentage and sampling errors for sources of teacher satisfaction

Source	Percentage of teachers indicating reason as 'very important'	
	%	SE
Living conditions		
Travel distance to school	54.7	3.84
Availability of teacher housing	79.6	3.11
Quality of teacher housing	69.1	3.56
School facilities/equipment		
Quality of school buildings	67.1	3.62
Quality of classroom furniture	75.3	3.33
Quality of classroom supplies	78.6	3.16
Relationships with others		
Quality of school management and administration	69.5	3.55
Good relations with the community	79.0	3.14
Career advancement		
Expanded opportunities for promotion	78.5	3.17
Opportunities for professional development	64.3	3.69
Level of teacher salary	70.1	3.53

Table 3.12. Percentage of sampling errors for five reasons rated as 'most important' in a list of 13 reasons dealing with teacher job satisfaction

Five most important reasons	Percentage rating as most important		Province with highest frequency
	%	SE	
Level of teacher salary	15.3	2.78	Luapula (33.2%)
Quality of teacher housing	13.1	2.60	Luapula (36.4%)
Quality of school management	3.5	1.42	Southern (10.0%)
Availability of teacher housing	1.4	0.91	Western (5.9%)

When the teachers had completed the checklist of 13 reasons for job satisfaction, they were given an opportunity to select one reason that was the 'most important'. The results of this selection have been listed in *Table 3.12*. In this table the percentages selecting the given reasons with the highest ratings have been presented. Also in this table the province in which each of these reasons had the highest rating has been listed.

Two reasons emerged as 'most important': level of teacher salary and quality of teacher housing. These results need to be pointed out to the Ministry of Education – because keeping good and experienced teachers within the education system needs to be a top-priority objective in Zambia.

What was the general condition of school buildings?

The assessment of the general condition of school buildings in Zambia was obtained by examining the responses to questions asked of school heads concerning the state of the buildings (from being in order, to needing different amounts of repair, to needing to be completely rebuilt). Another indicator of the general condition of the buildings was the amount of space per pupil in square metres. Finally, the provision of toilets per pupil is a matter of general concern in many SACMEQ countries, as well as in Zambia. The responses by teachers concerning these three areas have been listed in *Table 3.13*.

(a) Repair status

The school head was asked to state the condition of his or her school building on a five-points scale with the following values: 5 = in good condition; 4 = some classrooms needed minor repairs; 3 = most or all classrooms needed minor repairs; 2 = some classrooms needed major repairs; and 1 = school needs complete rebuilding. This variable was recorded so that it was possible to calculate the percentage of Grade 6 pupils in schools where the school head perceived that these schools were either in 'need of major repair' or 'needed complete rebuilding'. These percentages have been listed in *Table 3.13*.

Table 3.13. The means and sampling errors for selected school building characteristics

Province	Repair status		Classroom space		Toilet provision	
	Mean	SE	Mean	SE	Mean	SE
Copperbelt	52.0	10.19	1.8	0.16	89.2	18.32
Central	82.4	9.53	1.4	0.12	78.8	14.10
Lusaka	65.0	10.94	1.1	0.11	114.5	19.84
Southern	80.0	9.18	1.8	0.25	75.1	22.15
Luapula	63.6	15.17	1.1	0.18	86.7	59.06
Northern	100.0	0.00	0.9	0.09	45.3	6.59
Eastern	86.7	9.09	1.5	0.23	45.5	8.50
North Western	78.6	11.39	1.0	0.17	63.9	13.43
Western	93.3	6.65	1.4	0.19	25.1	4.28
Zambia	74.1	3.59	1.4	0.07	77.7	7.72

This analysis showed that nearly three quarters (74.1 percent) of Grade 6 pupils in Zambia were in schools which the head reported were in need of major repairs or re-building. All of the sample schools in Northern province were reported to be in need of major repairs or rebuilding. These results were alarming – to say the least. There would appear to be a major crisis in Zambia with respect to the repair status of school buildings.

Policy Suggestion 3.18: The Ministry should conduct an audit of the state of repair of school buildings and undertake those major repairs of school buildings that must be attended to immediately in order to prevent an acceleration of damage to buildings and the resources contained in them.

(b) Classroom space

This variable was calculated by dividing the internal area of all of the classrooms (in square metres) in the school by the maximum number of pupils enrolled for one shift in the school. The national average in Zambia was 1.4 square metres for each primary-school pupil in the country. Although the variations among provinces do not appear very large, it is worth remarking that pupils in Copperbelt province had twice as much space per pupil as those in the Northern province. Given that the variable included the teacher areas and shelving space etc. in classrooms, pupils in the latter province must be very crowded.

(c) Toilet provision

At the national level, Grade 6 pupils attended schools where there were 77.7 pupils per toilet. This varied very widely among provinces – from 25.1 pupils per toilet in the Western province, to 114.5 in Lusaka. The effect of a long-established systematic policy of toilet provision can be seen in Eastern, Northern, and Western provinces, where the average provision was good in comparison with other provinces.

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(d) General school facilities

The data presented in *Table 3.14* demonstrated a generally low level of school facilities provision. Only a major injection of funding could improve the situation presented by these figures. In the first instance the Ministry should review priorities in this area and then commence to work towards the provision of the most-needed items. A top-priority item would clearly need to be access to water. A cross-tabulation of the two items related to the availability of water from pipes or wells/boreholes showed that over one third of pupils were in schools without water.

The fact that over three quarters of pupils were in schools without electricity and telephones is not surprising, given the general development of the country; but the lack of communications and lighting must make coherent planning and effective administration almost impossible. The questions about modern technological equipment such as fax machines, overhead projectors and photocopiers were hardly relevant to these pupils. However, the almost complete lack of access to either a radio or tape recorder was astonishing and calls for attention.

Policy Suggestion 3.19: The Ministry should consider options for working with a donor agency in order to implement a programme to provide water to schools.

Policy Suggestion 3.20: The Ministry should review the list of available school facilities with a view to developing a priority list for spending within the Medium-Term Strategic Plan.

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Table 3.14. Percentages and sampling errors for pupils in schools with selected facilities

Facility	Percentage with facility	
	%	SE
School buildings		
School library	52.4	4.09
School hall	5.1	1.80
Staff room	17.9	3.14
School head's office	58.1	4.04
School secretary's office	7.9	2.21
Storeroom	24.4	3.51
Cafeteria	4.8	1.75
School grounds		
Sports area	62.2	3.97
Playground	67.9	3.82
School garden	62.3	3.97
General services		
Piped water	34.4	3.89
Well or borehole	31.0	3.79
Electricity	22.7	3.43
Telephone	27.1	3.64
Equipment		
Fax machine	2.4	1.25
Typewriter	16.6	3.05
Duplicator	10.8	2.54
Radio	7.4	2.14
Tape recorder	3.3	1.64
Overhead projector	0.0	0.00
TV	0.9	0.77
Film projector	0.9	0.77
Video-cassette recorder	0.0	0.00
Photocopier	0.6	0.63
Computer	0.0	0.00

What level of access did pupils have to books?

Elley (1992) showed that the more that children were able to read books, and the more that they had books available for them to read, the higher would be their achievement in reading literacy. In this study, several questions were asked about the availability of a classroom library, school library, and the arrangements for allowing pupils to borrow books from these libraries. The responses to the questions have been summarized in *Table 3.15*.

(a) Classroom library

An international study of reading literacy (Elley, 1992) involving 32 systems of education, showed that high levels of literacy were associated with the availability of classroom libraries from which pupils could borrow books. The Grade 6 teachers in this study were asked about the number of books in the classroom library. If there was no classroom library, the teacher was directed to record zero books. In *Table 3.15* the first column presents the percentage of Grade 6 pupils in classrooms with a library.

Table 3.15. The percentages and sampling errors for pupils' level of access to books

Province	Library availability				Pupils permitted to borrow books	
	Classroom		School			
	%	SE	%	SE	%	SE
Copperbelt	54.7	8.12	72.0	9.16	64.0	9.79
Central	48.8	11.91	47.1	12.48	35.3	11.94
Lusaka	27.9	9.19	35.0	10.94	25.0	9.93
Southern	37.0	10.83	45.0	11.41	30.0	10.51
Luapula	66.8	11.48	90.9	9.07	81.8	12.17
Northern	45.0	11.28	50.0	11.47	35.0	10.94
Eastern	53.3	12.95	53.3	13.34	40.0	13.10
North Western	57.1	13.44	35.7	13.30	35.7	13.30
Western	46.7	13.20	26.7	11.79	13.3	9.06
Zambia	46.2	3.84	52.4	4.09	41.3	4.03

Only about half of the Grade 6 pupils were in classrooms with a classroom library. Lusaka province had just over a quarter of its pupils in classrooms with classroom libraries. These were disappointing results because if pupils are to have the opportunity to practise their reading skills, they must have access to books.

(b) School library

Just over half of Grade 6 pupils in Zambia were in schools that had a school library. Some pupils were in schools that had both a classroom library and a school library. However, there was very wide variation both among and within provinces. Only just over a quarter of Grade 6 pupils in Western provinces and only just over a third of those in Lusaka were in schools with a school library, compared to over 90 percent in Luapula.

(c) Borrowing books

Even though Grade 6 pupils may be in classrooms with a classroom library, or in schools with a school library, they may not be allowed to borrow books to take home to read. School heads were therefore asked a question about the possibility of pupils borrowing books for overnight loan.

Just over two in five Grade 6 pupils in Zambia attended schools where they were allowed to borrow books. Rather obviously, the percentages were much higher in provinces such as Luapula and Copperbelt, where the availability of libraries was higher, and much lower in provinces such as Lusaka and Western, where the availability of libraries was lower.

There were deviations between library availability and borrowing. This was for reasons such as lack of facilities at home to read, school experience with loss of books, etc. Nevertheless, it is important that books are available for pupils to read, and that they are used to the maximum feasible level.

Policy Suggestion 3.21: The Ministry, through the Zambia Library Services, should devise strategies to improve access to books through the provision of school and classroom libraries. Measures should be taken to ensure that, where school and classroom libraries are available, the pupils can borrow books and take them home to read.

Conclusion

The most striking findings from this chapter involve the high percentages of pupils in schools in a state of poor repair, with relatively few items of classroom furniture and classroom supplies, with few readers/textbooks, exercise books, notebooks, and with few general school facilities. Although there is some variation between provinces, it is the low overall level of provision that is striking. Indeed, the Zambian primary schools – at least on the basis of the data from this Grade 6 survey – seem to be starved of the wherewithal for good teaching and learning. The above results are further compounded by a relatively high number of unqualified teachers and relatively high grade repetition.

A series of suggestions for action have been made throughout the chapter. Some require effort to change certain aspects; some require money; and some require both. The lack of furniture and the poor repair status of schools can be solved, if there is a will, by communities helping in the production of furniture and repairing buildings. The fact that 25 percent of pupils are in classrooms without a usable blackboard could be quickly remedied.

From other studies, it is known that the opportunity to read produces higher levels of reading. In primary schools, classroom libraries are more effective than school libraries. In the short run, this problem can be solved by having mobile libraries that move from school to school.

Some of the 'teaching' deficiencies such as insufficient testing of pupils, or too infrequent meetings with parents, can be remedied by introducing the concept and procedures into pre- and in-service teacher training programmes and in-service programmes for school heads. On the other hand, central administration decisions can be used to reduce the

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differences between provinces in the percentage of qualified and unqualified teachers in each province.

In short, there are a series of measures that need to be taken simultaneously. But, in order to improve pupils' reading skills, the highest priority is to ensure a sufficient quantity of readers/textbooks for pupils, and the availability of books (through classroom libraries and mobile libraries), so that children have the opportunity to read.

Chapter 4

How do the conditions of schooling in Zambia compare with the Ministry's own benchmark standards?

Introduction

In this chapter the discussion of schooling conditions has been extended beyond the descriptive accounts given in the previous chapter, to a comparative analysis in which conditions are compared with reference to benchmark standards laid down by the Ministry of Education. This comparative analysis has permitted judgements to be made about key aspects of the educational environment in relation to the minimal levels of provision that the Ministry has established for the proper functioning of primary schools.

In Zambia, the provision of equipment and teaching and learning materials in schools is centrally controlled. However, in the envisaged decentralized educational delivery system, this function will be devolved to lower levels. The decentralization programme was launched on a small scale in September 1995 in the Copperbelt province. The second large-scale phase commenced in July 1997.

The Ministry has a very strong Procurement and Supplies Unit that centrally procures and distributes virtually all educational materials. It works closely with end users in drawing up specifications for items to be procured.

Basic organizational features of schooling

The basic organizational features of schooling that operate within schools have always been of great interest to educational planners. These features must be managed properly in order to optimize equity within the educational environment for pupils. In the SACMEQ project, questions were asked of school heads about the general characteristics and condition of their schools. The results of the analysis of these questions and their linkages to the benchmark standards set down by the Ministry of Education have been presented below.

(a) Total school enrolment

There are no Ministry guidelines for school size. Instead, school size and enrolment are determined by demand in a given locality. The classification of school categories is determined by the number of classes as follows:

Ungraded schools:	1 - 4 classes
Grade 3 schools:	5 - 11 classes
Grade 4 schools:	12 - 21 classes
Grade 2 schools:	22 - 31 classes
Grade 1 school:	32 - and more classes.

The policy of the Ministry of Education in Zambia is to upgrade all the ungraded schools to at least Grade 4 status by the year 2000. This consequently implies that the total school enrolment must not be less than 105 and not more than 1,280 since the minimum class enrolment benchmark is not less than 15 pupils and not more than 40 pupils per class. The

large size of some schools, especially in urban areas, is becoming a source of worry. The problem is further aggravated by the emerging phenomenon of 'Community self-help'. There has been an underlying assumption that communities can continue expanding schools for as long as they have the ability and means to do so.

Zambia has the high school-size benchmark of not more than 1,280 pupils per primary school. This benchmark for school size is the largest among the countries participating in the initial SACMEQ programme. Though the benchmark was high, only 52.3 percent of pupils were in schools of desirable size. The urbanized provinces of Copperbelt and Lusaka had 64 and 90 percent of Grade 6 pupils in schools that exceeded the benchmark, respectively. Luapula and Eastern provinces had the highest percentages that satisfied the benchmark, 90.9 and 86.7 percent, respectively.

(b) Class size

The Ministry's norm for class size was that no more than 40 pupils should be in one class, and not fewer than 15 pupils. Only 40.3 percent of the pupils were in classes that met the benchmark of 40 pupils or fewer per class. Luapula province had the highest (90.2 percent) percentage of pupils in schools that met the benchmark, whereas Lusaka province had the lowest (8.8 percent). The fact that 40.3 percent of pupils were in classes with fewer than 40 pupils implied that many schools were not only large in size, but also over enrolled. The Ministry clearly needs to develop some long-range plans for new school construction in areas where schools and classes are overcrowded.

Policy Suggestion 4.1: The Ministry should: (a) develop a long-range programme for the construction of new schools – especially in Lusaka, and (b) put ceilings beyond which communities should not be allowed to expand existing schools.

(c) Classroom space

The benchmark for classroom space was 'not more than 1.25 square metres per pupil'. This benchmark was the same for the other SACMEQ countries. The square metrage per pupil was calculated by dividing the total square metrage available for classroom space in the school by the total enrolment of the largest shift attending the school. However, where there was more than one shift, the enrolment of the largest shift was used. It must be noted that this calculation is probably an overestimate of the space per pupil, because in any one classroom there is furniture (cupboards, bookshelves, teacher table and chair, movable blackboard, etc.) that takes up space. Slightly under 80 percent of pupils were in classrooms that met the benchmark. However, in Eastern province the percentage was only 53.

Policy Suggestion 4.2: It is important for future educational data analysis to examine the effects of classroom space on school effectiveness. Systematic data on this matter should be captured in the annual school census.

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Table 4.1. Percentages of sampling errors for benchmarks related to the basic organizational features of schooling

Province	School size		Class size		Classroom space		Staffing ratio	
	% le 1,280	SE	% le 40	SE	% ge 1.25	SE	% le 40	SE
Copperbelt	36.0	9.79	32.9	7.66	84.0	7.48	36.0	9.79
Central	58.8	12.30	38.2	11.58	88.2	8.05	11.8	8.05
Lusaka	10.0	6.88	8.8	5.79	85.0	8.19	10.0	6.88
Southern	70.0	10.51	42.2	11.08	75.0	9.93	35.0	10.94
Luapula	90.9	9.07	90.2	7.24	63.6	15.17	45.5	15.71
Northern	60.0	11.23	54.5	11.29	65.0	10.94	20.0	9.17
Eastern	86.7	9.09	59.0	12.76	53.3	13.34	53.3	13.34
North Western	64.3	13.30	53.9	13.54	71.4	12.54	42.9	13.73
Western	73.3	11.79	42.4	13.08	73.3	11.79	60.0	13.06
Zambia	52.3	4.09	40.3	3.78	77.1	3.44	29.8	3.74

(d) Staffing ratio

Staffing ratio is often referred to as pupil/teacher ratio. This ratio is to be distinguished from class size. The staffing ratio is the total number of pupils in the school divided by the number of full-time equivalent teachers posted at that school. In a sense it reflects the 'wealth' of the school in terms of the provision of teachers. The benchmark set for Zambia was 40 pupils per teacher.

The results indicated that only 29.8 percent of Grade 6 pupils were in schools where the pupil/teacher ratio was less than 40 pupils per teacher. Only 10 percent of pupils in Lusaka and 11.8 percent in Central province were in schools that satisfied the benchmark figure. Western province, on the other hand, had a more favourable situation, with 60 percent of pupils in schools that satisfied the benchmark.

Policy Suggestion 4.3: The Ministry should work out strategies aimed at reducing the overall pupil/teacher ratio – especially in schools in Lusaka and Central provinces.

Classroom furniture and supplies

There were nine areas related to classroom furniture and classroom supplies that were employed in benchmark comparisons. The results of these analyses have been reported in *Tables 4.2* and *4.3*. There were no published benchmark levels in these two areas for Zambia and therefore it was decided to apply the benchmarks that had been agreed to by the SACMEQ national research co-ordinators. These benchmarks were mostly derived from 'common sense' judgements concerning the minimal levels of provision that would be acceptable in most school systems of the Southern Africa sub-region.

(a) Classroom furniture

In Zambia it is to be expected that every child will have a sitting and writing place in the classroom. The practice at primary-school level is to provide two-seater desks. The calculation was made by identifying the number of pupils in each classroom and then establishing whether there were enough sitting and writing places. In Zambia, there was no standard for chalkboards. It is also common practice to find chalkboards permanently affixed to classroom walls made of concrete. However, it is expected that every classroom should have a chalkboard. Therefore the benchmark of one chalkboard per classroom was used.

From *Table 4.2*, it can be seen that Copperbelt had 98.3 percent of Grade 6 pupils in schools that satisfied the benchmark for pupil sitting places and that four other provinces (Luapula, Eastern, North Western and Western) had figures of over 95 percent. The lowest in this respect was Northern province (67.3 percent) followed by Central province with 77.4 percent.

In the past there was not always a strong relationship between the provision of sitting places and writing places. However, the Ministry has of late been procuring two-seater desks with writing places. Nevertheless, it would appear that there is still a large stock of single chairs, leading to more seating places than writing places.

Table 4.2. Percentages and sampling errors for benchmarks related to classroom furniture

Province	Sitting places (one p.p.)		Writing places (one p.p.)		Chalkboard (one p.c.l.)	
	%	SE	%	SE	%	SE
Copperbelt	98.3	2.64	51.2	10.20	82.1	6.25
Central	77.4	10.45	63.9	12.01	73.5	10.51
Lusaka	81.7	8.87	64.5	10.97	58.5	10.09
Southern	88.5	7.31	51.0	11.47	73.7	9.88
Luapula	96.2	6.07	67.9	14.72	81.8	9.40
Northern	67.3	10.75	31.9	10.68	90.0	6.80
Eastern	96.2	5.11	77.3	11.21	93.3	6.47
North Western	97.4	4.42	76.0	11.85	64.3	13.02
Western	96.3	5.01	70.0	12.22	53.3	13.20
Zambia	87.3	2.73	57.1	4.05	74.9	3.34

A chalkboard is one of the most widely used pieces of furniture as a medium of communication. The teaching methodology used in Zambia makes the chalkboard an indispensable tool for the teacher. It was therefore very disturbing to see from *Table 4.2* that about 25 percent of Grade 6 pupils were in classes without a usable chalkboard. The only province that seemed well-off in this respect was Eastern, with 93.3 percent of Grade 6 pupils in classes having a usable chalkboard. Western province was the lowest, with only 53.3 percent of Grade 6 pupils in classrooms with a usable chalkboard.

Policy Suggestion 4.4: The Ministry should, as a matter of serious urgency, address the problems of (a) the provision of adequate sitting and writing places – especially in the Northern and Central provinces, and (b) the development of a comprehensive furniture database clearly stating the stock of desks, their life span and shortfalls, and provincial disparities. A focused programme of action should be undertaken to meet the shortfalls and disparities.

Policy Suggestion 4.5: The Ministry should ensure that all classrooms are provided with usable chalkboards. The immediate focus for action in this area should be on Western and Lusaka provinces.

(b) Classroom supplies

The percentage of Grade 6 pupils in classrooms with supplies that satisfied the benchmark figure has been presented in *Table 4.3*. For five of these items the benchmark was one per pupil. The supplies reported in this study were exercise books, notebooks, pencils, rulers, erasers, and ballpoint pens.

The overall pattern of classroom supplies was poor – with even the highest level of provision being only three in four Grade 6 pupils having an exercise book per pupil. Further, less than half overall (47.3 percent) had a notebook and less than a quarter in Lusaka and Western provinces. The results were also dismal for the supply of rulers and erasers. It is difficult indeed to understand how pupils are meant to learn in such circumstances, especially

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in Lusaka and Western provinces, where there was an absolute shortage of writing paper (whether exercise book or notebook) and less than a third had either rulers or erasers. The results for the pencil benchmark were particularly low – below 10 percent – in all provinces, although further examination of the data showed that this was due to some pupils having one or two pencils. Given that, officially, all pupils at this grade level were expected to use ballpoint pens, it was sad to note that only 67.2 percent of pupils had these pens. These findings deserve immediate investigation because a lack of basic writing materials is a barrier to effective classroom learning.

From *Table 4.3*, it can be noted that there was a major problem of classroom supplies. With the exception of the supply of exercise books in some provinces, the majority of Grade 6 pupils were in classes that failed to meet the benchmark standard.

Policy Suggestion 4.6: The Inspectorate and the Supplies Unit should investigate ways of distributing available exercise books as soon as possible, especially to Lusaka and Western provinces. Education boards, schools and parent-teacher associations should address the serious issue of about a third of Grade 6 pupils being without a writing pen.

Academic and professional qualifications of teachers and school heads

The results of the data analysis for both teachers and school heads have been presented in *Table 4.4*.

(a) Teacher qualifications

In Zambia all teachers are expected to have completed a minimum of 12 grades of primary and secondary education (excluding any years repeated). The benchmark set for academic qualification was therefore 12 years. All Grade 6 teachers are also expected to have completed two years of pre-service teacher training. It can be seen in *Table 4.4* that 81.4 percent of pupils were taught by teachers who met the benchmark for academic qualification. On the other hand, only 54.3 percent of Grade 6 pupils were taught by teachers who had the required professional qualifications. Slightly below half (41.8 percent) of Grade 6 teachers did not have the professional training. This has an adverse effect on the quality of teaching. For as long as there are untrained teachers in schools, the Grade 6 class will almost inevitably get the larger share. Untrained teachers, according to the Ministry norm, are not supposed to teach Grades 1 to 4 and schools almost invariably will not allow untrained teachers to teach Grade 7 (the final grade of primary school). This only leaves Grades 5 and 6 for the untrained teachers.

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Table 4.3. Percentages and sampling errors for benchmarks related to classroom supplies

Province	Exercise book (one p.p.)		Notebook (one p.p.)		Pencil (three p.p.)		Ruler (one p.p.)		Eraser (one p.p.)		Ballpoint pen (one p.p.)	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Copperbelt	77.0	3.57	63.2	4.09	5.8	1.98	37.8	4.11	51.8	4.24	68.0	3.95
Central	96.0	1.55	65.0	3.75	8.0	2.13	52.6	3.93	50.1	3.93	92.9	2.02
Lusaka	43.7	1.55	24.2	3.49	3.8	1.55	32.1	3.81	29.0	3.70	41.5	4.02
Southern	78.8	4.05	44.0	4.59	9.9	2.76	48.3	4.62	48.6	4.62	75.8	3.96
Luapula	91.6	3.78	55.4	9.60	5.7	4.49	38.4	9.39	38.3	9.39	64.7	9.23
Northern	82.8	5.36	54.3	5.03	9.5	2.96	42.7	4.99	37.6	4.89	61.8	4.90
Eastern	90.5	3.81	30.7	5.66	6.6	3.05	40.1	6.01	42.5	6.06	82.2	4.69
North Western	77.9	8.74	31.6	9.79	2.2	3.08	48.1	10.52	57.9	10.40	71.3	9.52
Western	64.3	6.00	21.1	5.11	4.0	2.46	32.9	5.89	29.7	5.73	58.2	6.18
Zambia	75.9	1.65	47.3	1.92	6.6	0.95	41.1	1.89	43.1	1.91	67.2	1.81

Table 4.4. Percentage of sampling errors for benchmarks related to the qualifications of teachers and school heads

Province	Teachers						School heads			
	Academic qualifications		Professional qualifications		In-service courses		Academic qualifications		Professional qualifications	
	%	SE	%	SE	%	SE	%	SE	%	SE
Copperbelt	92.9	4.20	74.3	7.12	15.9	5.96	60.0	9.99	96.0	4.00
Central	75.6	10.24	49.4	11.92	11.8	7.68	58.8	12.30	94.1	5.88
Lusaka	63.5	9.86	54.1	10.21	21.8	8.46	45.0	11.41	100.0	0.00
Southern	80.0	8.97	56.6	11.12	2.7	3.66	55.0	11.41	95.0	5.00
Luapula	100.0	0.00	33.0	11.46	30.7	11.25	54.6	15.71	90.9	9.07
Northern	82.5	8.61	60.0	11.10	15.0	8.09	50.0	11.47	95.0	5.00
Eastern	100.0	0.00	66.7	12.23	0.0	0.00	66.7	12.61	93.3	6.67
North Western	78.6	11.15	57.1	13.44	13.9	9.41	71.4	12.54	100.0	0.00
Western	66.7	12.48	53.3	13.20	20.0	10.59	53.3	13.30	100.0	0.00
Zambia	81.4	3.00	58.3	3.80	14.8	2.74	55.4	4.07	96.1	1.59

The low percentage of Grade 6 teachers attending in-service teacher training programmes provided yet another source of worry. Only around one in every seven Grade 6 teachers had attended at least one in-service training programme. This situation may be attributable to the somewhat irrational decision that untrained Grade 6 teachers do not qualify to attend in-service training!

(b) School head qualifications

School heads are expected to have the same academic qualifications as Grade 6 teachers and, for professional qualifications, they are expected to have had at least two years or more of teacher training. However, for primary schools that have been upgraded to 'basic schools', the school head is expected to have a minimum of three years of teacher training. For the past five years, the Ministry of Education has been running an in-service educational management training programme for all school heads in the country. Most of the school heads will have served for over 20 years and, at the time they were being admitted to the system, the benchmark for academic qualifications was three years less. This explains why only 55.4 percent of the Grade 6 pupils were in schools where their school heads met the benchmark.

It is however gratifying to note that 96.1 percent of the Grade 6 pupils were at schools where their school heads had the required professional qualification. Further, as mentioned earlier, over 75 percent of the school heads had attended the educational management training programme at the University of Zambia.

Conclusion

This chapter has examined the conditions of schooling in Zambia based on either a comparison with the benchmark standards set down by the Ministry, or a comparison with benchmark standards established by the SACMEQ national research co-ordinators. The approach taken was to group a range of indicators of the general conditions of schooling under three main headings: basic organizational features of schooling, classroom furniture and supplies, and the academic and professional qualifications of teachers and school heads.

The four indicators under basic organizational features, dealt with school size, class size, classroom space, and staffing ratio. Policy suggestions were prepared to propose the need for building new schools in some provinces, the need for expanded double-shift arrangements, an investigation of the problem of overcrowded classes, and an investigation of the issue of classroom space.

The indicators related to classroom furniture and supplies, dealt with the availability of sitting places, writing places, chalkboard, exercise books, notebooks, pencils, rulers, erasers, and ballpoint pens. The situation relating to classroom furniture was generally very poor throughout Zambia. The results presented in this chapter reinforce similar findings presented in *Chapter 3*.

The indicators related to the academic and professional qualifications of teachers and head teachers, summarized the formal and in-service education and training received by teachers and school heads. Two policy suggestions in this area indicated that problems had emerged with respect to the academic and the professional qualifications of teachers. There was also a nationwide deficit in terms of the amount of in-service training that had been received by teachers. The final recommendation focused on the academic qualifications of school heads, where there appeared to be a substantial problem.

Chapter 5

Have educational inputs to primary schools been allocated in an equitable fashion?

Introduction

This chapter is concerned with the equity of inputs to education. The political consideration of giving equality of educational opportunity to all is an issue that goes beyond providing children with access to school education. It also involves giving all those children who are already in school an equal opportunity to learn. One way to do this is to ensure that there is an equitable distribution of resource inputs to all schools so that parents see that all schools provide an equal chance for children to achieve their potential.

If steps are to be taken to address the issue of equity, it is important to know the location of differences or variations in resource inputs. For example, are variations in resource provision more pronounced among districts and provinces, or more within districts and provinces? An answer to this question provides guidance not only about which resources are distributed evenly or unevenly, but also suggests the level at which a decision must be taken (national or provincial) to address any major inequity.

In exploring the question of equity, it must be recognized that there is a need to examine disparities in association with the actual levels of provision. Such information is necessary because it enables the policy-maker to identify which resources require attention, and also to have an indication of the scale of supplementary resources that may be needed to achieve a more equitable distribution of resources.

This chapter concentrates mainly on an examination of inequities in the distribution of educational resources and not upon absolute resource levels and, consequently, it should be read in conjunction with the two previous chapters, which concentrate on baseline and benchmark resource allocations.

Two approaches to the measurement of equity are explained below. Then the results of applying them are examined.

Two approaches to the measurement of equity

(a) Variation among provinces

A statistic called the coefficient of intra-class correlation (rho) may be used to divide the variation in resource inputs into two components: (a) among provinces, and (b) among schools within the provinces. Rho can range from nearly 0.00 to 1.00. When used in this way, rho is a ratio that measures the percentage of total variation among schools that can be attributed to variation among provinces. The residual figure measures the average variation among schools within provinces.

To appreciate the meaning of rho, it is useful to consider two hypothetical school systems: systems A and B. In school system A, resources are allocated equally, or nearly equally, to all schools and, therefore, when calculations are made on average resource levels

for provinces in the system, one finds that these are more or less the same – except perhaps for some minor chance deviations. For such a school system, the value of rho would be close to zero because of the small variation among schools' provinces. In this situation, most of the variation would be among schools within provinces.

On the other hand, consider school system B where, because of administrative decisions, historical factors, or geographical differentiation of social-class groups, etc., there are large variations among the provinces. In this case, the value of rho would be very high. The majority of variation among schools in this case would be due to variations among provinces, and there would be little variation among schools within provinces.

The above examples are two extremes that serve to illustrate the interpretation of rho. In practical terms, if the intention is to judge whether the variation is more among provinces or more among schools within provinces, a rho of, say, 0.20 means that 80 percent of the differences are among schools within provinces and 20 percent among provinces. In contrast, a rho of 0.80 would indicate that 80 percent of the differences was among provinces and 20 percent among schools within provinces.

(b) Variation among schools within provinces

It is also possible to qualify the differences among schools within a particular province by making a comparison with the variation among schools at the national level. This can be done by using the formula below:

$$\frac{\text{Standard deviation for schools in a province}}{\text{Standard deviation for schools in the nation}} \times 100$$

The standard deviation of an indicator for a particular province measures the amount of variation among schools within that province, whereas the standard deviation for the whole country measures the amount of variation among schools for the nation. The ratio of the standard deviation for a province to the standard deviation for the nation, expressed as a percentage, provides a measure of the degree of equity within a province compared with the national picture.

To illustrate the interpretation of these ratio values, it is helpful to consider two hypothetical provinces: Province A and Province B. Assume that the levels of a resource are measured by an indicator that has a ratio value of 50 percent in Province A and 150 percent in Province B. This figure would mean that the variation in resource levels in Province A is 50 percent less than the variation in resource levels among schools for the whole nation; and the variation in Province B is 50 percent higher than for the nation. From these ratio values it can be said that, compared with the national picture, there has been an equitable allocation among schools in Province A. In contrast, the Ministry should be concerned about Province B because the inequalities among schools are larger than for the nation as a whole.

Equity calculations for material resource inputs

It can be seen from the last column in *Table 5.1* (variation among provinces) that the variation is minimal among provinces except for the School resources index – where there is considerable cause for concern. At the same time, it was seen from the results presented in an earlier chapter that the level of material resource inputs across the whole school system was generally low.

The first 11 columns of figures in *Table 5.1* show the standard deviation among schools within each province expressed as a percentage of the standard deviation among schools at the national level. From previous discussion, we know that a value of 100 for the ratio indicates that the degree of variation among schools within a province is the same as the degree of variation among schools for the country as a whole. It will be recalled that the average number of schools per province in the sample was only 17, and there must be some question about the stability of the variation within a province based on only 17 schools. Hence, the results for individual provinces should be considered cautiously.

The value of 84.1 for Copperbelt (Province 1) on the Index of classroom furniture, showed that variation among schools in the Copperbelt province was around 16 percent less than the variation among schools for the nation as a whole. In contrast, the value of 114.3 for the Southern province (Province 4) showed that the opposite situation applied – with the variation between schools being about 14 percent higher within Southern than for the national picture.

No province fell below 100 percent for *all* of the material resources in the list, the most equitable provinces in this area were Central (Province 2), Eastern (Province 7), and Western (Province 8). In these provinces five of the seven ratios were below 100.

Across all provinces, the most extreme variations did not exceed 120 – except for Southern (Province 4) with a ratio of 137 for 'Classroom space per pupil', and Luapula (Province 5) for 'Toilets per pupil' (with a ratio of 217) and for 'Classroom library' (with a ratio of 132).

The provinces with values in excess of 120 for any of the indices should be subjected to intensive review by the Ministry. The situation in Luapula appears to be particularly extreme in respect of 'Toilets per pupil'.

Policy Suggestion 5.1: The Ministry should undertake an investigation into why the distribution of the material resources contained within the School resources index is so inequitable across provinces. Those provinces which have lower resource levels should receive priority treatment in future resource allocations.

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Table 5.1. Equity of material resource distribution to schools as assessed by (a) variation among schools within provinces, and (b) variation among provinces

Material resources	Variation among schools within provinces									Variation among provinces (rho × 100)
	1	2	3	4	5	6	7	8	9	
Class furniture index	84.1	102.1	109.5	114.3	97.5	94.9	77.2	110.1	108.8	3.9
Class supplies index	88.6	106.9	108.8	102.4	83.9	91.1	60.4	115.9	108.5	0.0
Toilets per pupil	101.7	65.4	99.9	110.8	217.0	33.2	36.4	56.1	18.7	0.0
Classroom library (%)	110.3	93.0	71.6	103.8	131.6	103.5	70.7	92.1	88.2	0.0
Classroom space per pupil	98.4	67.4	61.3	137.2	73.0	47.6	107.2	80.7	92.2	4.2
Teacher housing quality	103.2	87.2	92.5	75.7	118.8	117.9	101.1	104.3	74.2	5.8
School resources index	101.7	96.1	105.8	87.8	73.0	79.8	66.8	105.1	65.0	24.5

Note: 1= Copperbelt, 2= Central, 3= Lusaka, 4= Southern, 5= Luapula, 6= Northern, 7= Eastern, 8= North Western, 9= Western.

Table 5.2. Equity of human resource distribution to schools as assessed by: (a) variation among schools within provinces, and (b) variation among provinces

Human resources	Variation among schools within provinces									Variation among provinces (100 × rho)
	1	2	3	4	5	6	7	8	9	
Teachers' professional qualifications	66.9	103.4	99.4	104.4	98.2	106.4	104.8	114.7	110.9	0.0
Teachers' academic qualifications	44.7	115.2	118.4	109.2	38.3	96.7	42.2	148.4	107.3	5.6
Teachers' experience	90.8	76.6	128.8	99.6	85.4	95.3	70.5	115.4	114.5	1.2
School head academic qualifications	131.1	111.8	101.5	76.1	62.9	116.4	67.3	80.7	95.7	0.0
School head professional qualifications	104.0	87.4	80.6	85.1	141.6	99.5	82.5	104.3	126.8	0.0
School head experience	77.7	52.9	189.8	75.8	103.1	73.7	114.1	56.7	75.5	0.0
Inspectors' visits	84.9	91.9	20.9	16.8	164.9	121.5	36.9	181.5	86.2	5.2
Pupil/teacher ratio	51.8	85.1	33.0	43.8	91.5	265.1	44.3	42.8	28.7	4.7

Note 1: 1= Copperbelt, 2= Central, 3= Lusaka, 4= Southern, 5= Luapula, 6= Northern, 7= Eastern, 8= North Western, 9= Western.

Note 2: The ratios marked with an asterisk (*) could not be calculated meaningfully because all schools (that is 100 per cent) in these provinces had the resource and therefore there was zero variation among schools within these provinces.

Policy Suggestion 5.2: The Planning Unit should undertake an investigation into why the allocation of material resource inputs among schools in the province of Luapula is so unequal for Toilets per pupil and Classroom library; and Southern for Classroom space per pupil.

Equity calculations for human resource inputs

In *Table 5.2*, the results have been presented for the assessment of equity in human resource inputs (a) among schools within provinces, and (b) among provinces.

Within provinces very large ratios occurred for the pupil/teacher ratio in Northern province and 'School head experience' in Lusaka province. There was a fairly large ratio for 'Inspectors' visits' in Luapula and North Western province, and for 'Teachers' academic qualification' in North Western province.

To re-allocate human resources is much more difficult than dealing with the material resources, which tends to be a matter of money. For example, it is not always easy to persuade teachers with better qualifications and more experience to go to less urbanized settings. The same is true for trying to move school heads with more experience. It will require a good deal of ingenuity on the part of the Zambian authorities to deal with this problem.

Policy Suggestion 5.3: Each Provincial Office should be asked to develop and review the list of indicators requiring action by the provincial education officers and forward proposals to reduce inequities.

Policy Suggestion 5.4: Each Provincial Office should ensure that the school head and responsible authorities are informed about the Ministry's list of material resource inputs to schools and their associated benchmark levels.

Conclusion

From the figures presented in *Tables 5.1* and *5.2* it was clear that many material and human resources had been allocated in an equitable fashion across regions. The main exception to this statement was of course with respect to the items included in the School resources index – where some re-analysis of allocations is clearly warranted. This general level of equity across regions, however, needs to be understood in association with the generally very low overall levels of provision across the whole of Zambian primary education.

Within individual provinces there were a number of instances noted where the allocation of resources was not all equitable. In this instance, it is the job of the Ministry to make sure that the provincial authorities rectify this situation and also that they set up appropriate information flows to monitor and improve equity in all future resource allocation decisions.

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Chapter 6

What is the level of reading for Grade 6 pupils overall and in the three domains of reading literacy?

Introduction

This chapter seeks to answer the following question: What is the level of reading for Grade 6 pupils overall and in the three domains of reading literacy? The question is addressed by initially presenting a brief explanation of the structure and content of the test which was used to assess the reading performance of Grade 6 pupils in Zambia. This is followed by a description of how the reading specialists of the Ministry of Education identified cut-off scores on the test which corresponded to 'minimum' and 'desirable' levels of reading literacy. The results for the percentages of pupils achieving the minimum and desirable levels of mastery are then presented. The chapter concludes with an examination of pupil performance in three key domains of reading literacy: narrative, expository and documents.

The structure of the reading test

The reading test was constructed as a team research project by the SACMEQ national research co-ordinators. The test was designed to provide a valid measure of basic literacy skills for Grade 6 pupils – not only in Zambia but also in the other countries participating in SACMEQ's initial project. The test items were constructed so as to conform to the reading syllabi for Grade 6 in the different countries. Reading specialists in the different countries also reviewed the items in order to eliminate those that were unsuitable due to content, language, and cultural bias. The items were trial-tested and a final test of 59 items was assembled after a comprehensive analysis of (a) the psychometric characteristics of the items, and (b) the balance of the test across the main reading content and reading skill areas. The 59 items covered the three main domains of reading literacy as described in an earlier chapter: narrative (21 items), expository (23 items), and documents (15 items).

In *Table 6.1* the structure of the reading test has been summarized. In the first column the names of the topics used for the passages in the reading test have been listed, followed by an indication of the dimension in which the topic was located. In the next three columns the passage has been allocated to one of the three dimensions of reading. In the final two columns the total number of questions for each topic and the number of questions that were nominated as being 'essential' according to the procedures outlined below have been given. For example, the topic of the first passage in the test was a story about a little boy called Tembo. This was a narrative passage which was linked to a total of five questions, of which three were considered essential.

The subset of 46 'essential' items was selected by a panel comprising a group of four experienced Grade 6 teachers, two of the Ministry's reading specialists (from the primary Inspectorate), and the Zambian National Research Co-ordinator. The panel was assigned the task of reading through the passages in the pupil test and accompanying test items with a view to identifying those items which they deemed to be 'essential for Grade 6 pupils in Zambia to master if they were to commence a successful year of study at Grade 7 level'.

Table 6.1. The structure of the reading test (topics, dimensions, total questions, and essential questions)

Reading test topics	Dimension			Total questions	Essential questions
	N	E	D		
Tembo	✓			5	3
Bird	✓			5	4
Island			✓	4	4
Joseph	✓			5	4
Oranges		✓		4	3
Maria			✓	3	2
Quicksand		✓		3	1
Empty bottles			✓	4	4
Carrots		✓		5	4
Temperature			✓	4	3
Maize		✓		6	6
Grandpa	✓			6	5
Tree		✓		5	3
				59	46

Note: N = narrative, E = expository, and D = documents.

The construction of six reading test scores

(a) The total score on the 46 essential items

The first score that was constructed was a total test score on the 46 essential items that composed the test. Pupils were given a score of '1' for each correct item and '0' for each incorrect item – the total score was then calculated as the sum of these values.

(b) Two mastery scores based on standards set by the Ministry's reading specialists and Grade 6 reading teachers

Two 'mastery' scores were constructed from a subset of 46 'essential' items selected from the 59 test items that had been completed by all Grade 6 pupils.

The panel that had selected the essential items agreed on what would be a 'minimum' level and a 'desirable' level of performance on these items. To achieve the minimum level of performance a pupil was required to obtain correct answers for 23 of the 46 items. To achieve the desirable level of performance a pupil was expected to obtain correct answers for 37 of the 46 items. Thus the first and second test scores were dichotomous designations of mastery at two levels of performance.

It is extremely important to note here that all of the panel work was completed *before* the data had been collected and processed. That is, the minimum and desirable performance

standards were based on the professional knowledge and experience of Zambian reading specialists – and not on the (commonly used but somewhat arbitrary) approach of selecting cut-off points *after* an inspection of the actual distribution of reading scores.

(c) Three sub-scale scores based on three sub-dimensions of reading

A further three test scores were based on the three sub-dimensions described above. That is, the total pool of 59 items was split into three subsets: Narrative (21 items); Expository (23 items); and Documents (15 items) and pupil scores were calculated for each subset.

Analyses of mastery levels

The mean scores for the 46 essential test items and their sampling errors have been presented for each province and for Zambia overall in *Table 6.2*. This has been followed by the percentages of pupils reaching the minimum and desirable levels of mastery in reading.

The mean score on the essential items of the reading test for Zambia was 18.3 out of a possible score of 46. This level of performance was very low considering that (a) every effort had been made during the test construction procedures to design the test to suit the skills of the average Grade 6 pupil; and (b) the 46 items had been selected by a specialist Zambian panel because of their central importance in terms of making a successful transition to the next grade of schooling. The mean scores varied only marginally between provinces – from a low of 16.7 in Southern to a high of 19.8 in Luapula.

The extremely poor reading performance of the Grade 6 pupils was captured with greater clarity by the overall percentages of pupils reaching the minimum and desirable levels of performance on the essential items. From *Table 6.2* it may be seen that, at the national level, only 25.8 percent of Grade 6 pupils reached the minimum performance cut-off and only 2.3 percent of Grade 6 pupils reached the desirable performance cut-off. These results were disturbing, to say the least, and certainly will require the Ministry to take some major action to remedy the situation.

The information presented in *Table 6.2* concerning minimum and desirable levels of mastery provided an opportunity to generalize to the population of all Grade 6 pupils in Zambia with respect to the performance standards set down by the Ministry's own reading experts. To illustrate, consider the two figures of 25.8 percent and 2.4 percent for the overall percentage of Grade 6 pupils reaching minimum and desirable levels of mastery.

Table 6.2. Mean performance on 46 essential items and percentages of pupils reaching minimum and desirable levels of mastery

Province	Performance on 46 essential items		Percentage reaching minimum level of mastery		Percentage reaching desirable level of mastery	
	Mean	SE	%	SE	%	SE
Copperbelt	18.9	0.80	29.7	4.04	2.3	0.94
Central	16.9	0.63	16.9	3.48	0.8	0.51
Lusaka	19.2	0.60	30.1	3.76	1.9	1.09
Southern	16.7	0.78	16.0	3.49	3.2	1.30
Luapula	19.8	1.99	32.8	9.88	4.3	2.90
Northern	18.2	0.93	26.0	5.56	1.5	0.83
Eastern	18.5	0.94	25.1	4.68	2.0	1.68
North Western	18.6	2.14	27.3	8.13	6.8	5.66
Western	19.3	1.24	33.0	7.27	2.1	1.27
Zambia	18.3	0.33	25.8	1.71	2.3	0.48

Using these overall figures and their associated standard errors, it was possible to make the following statements about the reading performance of the total population of Grade 6 pupils in Zambia.

a) The percentage of the total population of Grade 6 pupils in Zambia that reached the minimum level of mastery on the reading test was (with 95 per cent confidence interval) located between 22.4 percent and 29.2 percent (25.8 percent ±2(1.7)).

b) The percentage of the total population of Grade 6 pupils in Zambia that reached the desirable level of mastery in the reading test was (with a 98 per cent confidence interval) between 1.3 percent and 3.3 percent (2.3 percent ±2(0.48)).

These figures may be looked at in another way by subtracting the percentages from 100 per cent in order to calculate the percentages of pupils who have *not* reached the minimum or desirable mastery levels as set by the Zambian specialist panel. Thus, we can be very confident that between 70.8 percent and 77.6 percent of Grade 6 pupils have *not* reached the *minimum* levels; and similarly that between 96.7 percent and 98.7 percent of Grade 6 pupils have *not* reached the *desirable* levels.

The results presented an extremely gloomy picture concerning the reading performance of Grade 6 pupils in Zambia. By converting the percentages into estimated 'counts', it was possible to obtain a numerical picture of the problems facing the Zambian primary education system. For example, since it was known that, in 1995, there were 169,148 Grade 6 pupils in the defined Grade 6 target population in Zambia, then between 119,757 pupils (70.8 percent) and 131,259 pupils (77.6 percent) had *not* reached the minimum level of mastery in reading. Further, between 163,566 pupils (96.7 percent) and 166,949 pupils (98.7 percent) had *not* reached the desirable level of mastery in reading.

These figures highlight the need for a review of Ministry policy concerning the acquisition of literacy skills at the upper end of the primary-school system. Many reasons could be advanced to explain why the performance of Grade 6 pupils was so poor. For example, perhaps there were problems with the academic and teaching skills of the teachers, perhaps there were difficulties in providing the basic inputs to education, or perhaps the low level of performance was linked to the home characteristics of the pupils. Indeed, it may well be that it was a combination of these types of factors that were associated with the low levels of performance.

Although there were variations between provinces, in even the highest-performing provinces of Lusaka, Luapula, and Western, around two thirds of the Grade 6 pupils had *not* reached the *minimum* level of mastery; worse still, in Central and Southern provinces over 80 percent of Grade 6 pupils had not reached the *minimum* level of mastery. In terms of the *desirable* level of mastery, the picture was uniformly disastrous: in every province, fewer than one in ten Grade 6 pupils had reached the *desirable* level.

Policy Suggestion 6.1: The Ministry should establish a Reading Literacy Task Force at the primary-school level in order to undertake a comprehensive investigation into why the reading skills of Grade 6 pupils in Zambia are so poor in comparison with the 'minimum' and 'desirable' performance standards set down by the Zambian reading specialists.

Policy Suggestion 6.2: The Ministry should undertake an investigation into the wide variation among provinces with respect to the mastery of basic literacy at the Grade 6 levels.

It is useful to make a comparison between the poor performance of Grade 6 pupils on the SACMEQ test and their much better performance on the Primary School Leaving Examination which they sat for in 1997. The research results presented above suggest that it is quite possible that reasonably large numbers of those pupils that passed the examination were actually 'illiterate' – according to standards set down by the Ministry's own experts. This is a cause for concern and implies that a rigorous investigation be made into a number of questions. For example: Were these pupils genuinely able to improve before the Grade 7 Primary School Leaving Examinations? Did the Primary School Leaving Examination actually assess reading literacy, or is it simply a process of creating a list of pupils in rank order which will permit a set percentage of pupils to be selected for higher levels of education due to the limited availability of secondary-school places? Are the Primary School Leaving Examinations items subjected to a comprehensive statistical analysis? Are the Primary School Leaving Examinations 'pass' levels being defined (a) *before* the examination scores are available, and (b) according to justifiable standards by recognized subject-matter experts?

Another issue that needs to be addressed by the Ministry is to establish whether there is any particular pattern (on subsets of test items) within the overall very poor performance on the 59-item SACMEQ reading test. This will require the Curriculum Development Centre and the Examination Council to examine the item-analysis statistics and to sort the items into three broad groups: those where the students had 'no problems', those that the students found 'rather difficult', and those that the students found 'very difficult'. A second analysis is then required of the precise reading skills that are required to address those second two problem areas. This analysis should provide clues as to which areas of the reading curriculum are 'getting it right'. On this basis, it should be possible to establish the most cost-effective ways of improving the teaching materials or the teaching practices or, very possibly, both.

Policy Suggestion 6.3: The Planning Division should undertake a study which compares the performance of pupils on the SACMEQ test and the Primary School Leaving Examination, and then bring forward some explanations for the major discrepancies in results.

Policy Suggestion 6.4: The Examinations Council and The Curriculum Development Centre should be asked to examine pupil performance on each of the 59 items of the reading test in order to identify the most cost-effective strategy for revising or supplementing teaching materials, and for informing the design of in-service training programmes.

Analysis of mastery levels for sub-groups

In *Table 6.3*, the results for the minimum and desirable levels of mastery for certain sub-groups of pupils have been presented. The first sub-groups to be examined were boys and girls. Then socio-economic groups (based on a measure of the number of possessions in the pupils' homes) were considered, and finally sub-groups defined by school location.

A higher percentage of boys, 28.0 percent, than girls, 23.1 percent, reached the minimum mastery level and, within the universally very poor scores, the differences were not quite statistically significant – however, this 'gender' gap of nearly 5 percentage points is certainly worth noting.

A list of 'possessions in the home', as described in *Chapter 3*, was used as a surrogate measure of the socio-economic circumstances of the homes from which the pupils came. Each pupil was given a score from 0 to 14 depending upon the number of possessions located in his or her home. A 'very low' socio-economic level was defined for those pupils coming from homes having 0 or 1 possession; the 'low' level as 2 or 3 possessions; the 'moderately low' level as 4 possessions; the 'moderately high' level as 5 possessions; the 'high' level as 6 to 8 possessions; and the 'very high' level as 9 to 14 possessions. It may be seen from the final column of *Table 6.3* that this classification divided the total sample of 2,558 pupils into six groups ranging in size from around 291 to 663 pupils.

There were very few pupils (15.3 percent) who attained the *minimum* mastery in the very low socio-economic group, and less than 1 percent reached the desirable mastery level. Then there was a relatively large jump to 24.3 percent of pupils for the low socio-economic group who reached the minimum mastery level. There was a kind of 'performance plateau' for pupils in the low to moderately high group, where the percentage of pupils reaching the minimum level was around 25 percent. The performance in the next two higher groups was better, with 28.3 percent for the high group and 31.3 percent for the very high group.

The final set of figures in *Table 6.3* showed similar performances of pupils in isolated/rural settings and small towns. A substantial jump in performance was shown by pupils in large cities with respect to the minimal level. However, at the desirable level there was little difference among the three locations. It is important to note that care must be exercised in interpreting these trends because of the possibility of confounding factors associated with differences in socio-economic levels among school locations.

Table 6.3. Percentages of pupils reaching minimum and desirable mastery levels for sub-groups of pupils

	Minimum mastery level		Desirable mastery level		Sample size
	%	SE	%	SE	
Gender					
Boys	28.0	2.39	2.5	0.67	1,386
Girls	23.1	2.44	2.2	0.68	1,172
Socio-economic level					
Very low (0-1)	15.3	3.92	0.7	0.74	331
Low (2-3)	24.3	3.49	2.4	1.39	594
Moderately low (4)	27.3	4.70	2.1	1.70	353
Moderately high (5)	26.6	5.13	0.0	0.00	291
High (6-8)	28.3	3.47	3.7	2.78	663
Very high (9-14)	31.3	5.10	3.7	4.26	326
School location					
Isolated/rural	24.0	2.14	2.2	0.61	1,623
Small town	23.9	4.81	0.9	0.87	309
Large city	31.2	3.67	3.1	1.10	626
Zambia	25.8	1.71	2.4	0.48	2,558

Table 6.4. The means and sampling errors of pupils on the three dimensions of reading achievement

Provinces	Narrative (21 items)		Expository (23 items)		Document (15 items)		Total test (59 items)	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Copperbelt	8.6	0.38	8.8	0.44	6.0	0.31	23.4	0.98
Central	7.7	0.31	7.9	0.32	5.2	0.24	20.8	0.71
Lusaka	8.3	0.30	9.4	0.28	6.1	0.22	23.8	0.67
Southern	7.5	0.39	7.6	0.41	5.4	0.30	20.6	0.95
Luapula	8.8	0.89	9.4	0.95	6.2	0.73	24.4	2.26
Northern	8.0	0.46	8.7	0.84	6.1	0.39	22.8	1.13
Eastern	7.8	0.44	8.8	0.54	6.2	0.38	22.8	1.13
North Western	8.7	1.15	8.7	1.12	5.9	0.74	23.2	2.76
Western	9.0	0.71	9.1	0.64	6.4	0.48	24.5	1.62
Zambia	8.2	0.16	8.7	0.17	5.9	0.13	22.7	0.39

Analysis of narrative, expository, and document sub-scales

As described above, there were three sub-scales that made up the literacy test: Narrative (21 items); Expository (23 items); and Documents (15 items). In *Table 6.4* the mean scores and sampling errors on each of the three dimensions of reading have been presented.

Each sub-scale had different numbers of items and therefore a summary overall comparative picture was obtained at the national level by converting the average scores into percentages. The overall situation for Zambia was as follows: in the Narrative sub-scale 39.0 percent (8.2 out of 21 items) of responses were correct, in the Expository sub-scale 37.8 percent (8.7 out of 23 items) of responses were correct, and in the Document sub-scale 39.3 percent (5.9 out of 15 items) of responses were correct. The overall values were all equally low suggesting that, even if insufficient time was being spent overall on reading, the *balance* between the time spent on learning to read in the three skill areas was probably fairly similar.

There was only minimal variation in achievement on the sub-scales described in *Table 6.4* among the provinces – although Southern province, which was the lowest performer on the 46 essential items (*Table 6.2*), was also the lowest scorer on two out of the three sub-scales; and Western, Luapula and Lusaka provinces, which were the best performers on the 46 essential items (*Table 6.2*), were also the three best performers on the sub-scales.

In *Table 6.5* the narrative, expository and document scores have been presented for the sub-groups listed in *Table 6.3*. The same patterns emerged as was evident for the corresponding analysis of minimum and desirable mastery levels. That is, there was a tendency for boys to have slightly higher scores than girls in each of the three domains – however, these differences were rather small. Pupils from higher socio-economic backgrounds also tended to have higher scores than pupils from lower socio-economic backgrounds, but these differences were only large at the extremes. Also, the impact of school location observed in *Table 6.3* was repeated here, but again the differences were small.

In the above discussion the reading performance of various sub-groups of pupils has been examined. However, a critical question in such an examination is to consider to what extent the patterns of differences among the sub-groups is stable or changing over time? For example: is the slightly superior performance of boys over girls consistent – or is it expanding or contracting over time? Will the emerging improved economic conditions result in a reduction of performance disparities among socio-economic groups and among various school locations? These are all very important questions as Zambia seeks to emerge as a stable and economically successful nation.

In order to have access to the information required to answer these kinds of important questions about the quality of education in Zambia, it will be necessary for the Ministry to begin planning now for the establishment of a strong and comprehensive database related to literacy levels in primary schools.

Policy Suggestion 6.5: The Ministry should design and implement a continuous system for monitoring literacy levels in primary schools which should feature a detailed analysis of sub-groups of students broken down by variables such as province, district, gender, socio-economic level, and school location.

Table 6.5. Means and sampling errors of different sub-groups of pupils

Sub-groups	Narrative		Expository		Documents	
	Mean	SE	Mean	SE	Mean	SE
Gender						
Boys	8.2	0.22	8.7	0.24	6.1	0.18
Girls	8.1	0.24	8.6	0.24	5.6	0.18
Socio-economic level						
Very low (0-1)	7.0	0.42	7.5	0.44	5.0	0.33
Low (2-3)	8.1	0.33	8.5	0.36	5.8	0.26
Moderately low (4)	8.2	0.38	9.0	0.45	6.0	0.34
Moderately high (5)	8.1	0.46	8.7	0.47	5.9	0.35
High (6-8)	8.5	0.33	9.0	0.34	6.0	0.25
Very high (9-14)	9.0	0.48	9.0	0.50	6.2	0.37
School location						
Isolated/rural	8.0	0.20	8.6	0.22	5.8	0.16
Small town	7.8	0.44	8.3	0.48	5.6	0.36
City	8.9	0.35	8.9	0.35	6.1	0.26
Zambia	8.2	0.16	8.7	0.17	5.9	0.13

Conclusion

This chapter has undertaken a detailed examination of the reading-literacy levels of Grade 6 pupils in Zambia. Two key points concerning this examination need to be restated: (a) the test that was used to assess Grade 6 literacy levels was prepared in a scientific manner so as to ensure its validity for this purpose, and (b) the 'minimum' and 'desirable' performance levels were specified by Zambian reading specialists before the data were collected and analyzed.

These two key points, when taken in combination with the overall poor performance of the pupils in Zambia and the extremely poor performance of certain sub-groups of pupils, suggest that the time has come for a searching review of the general conditions of schooling, the quality of the reading curriculum, and the quality of the teachers and their teaching methods. Several starting points have already been put forward as policy suggestions in this chapter. However, the magnitude of the challenge suggests that a major attack on this area will require the Ministry to work with major donor agencies to identify appropriate solutions and to allocate sufficient resources to develop strategies for implementing those solutions.

Chapter 7

From Policy Suggestions to action

Policy Suggestions contained in this Report in the context of the Ministry

The Ministry of Education is continuously working to improve inputs to schools, teaching-learning processes in schools, and the learning outcomes of the pupils. As has already been mentioned in this report, the ungraded schools are gradually diminishing, the structure of schooling is being changed, and the system is being decentralized to the provincial level. These are but some of the many actions being undertaken by the Government of Zambia. The research findings that have emerged from the SACMEQ Grade 6 study will provide further systematic input to the process of improving the quality of education.

Not all of the data in the SACMEQ study have been presented in this report and the Ministry of Education will be conducting further analyses and examining more in depth the relationship between the teachers' views, goals, and teaching strategies.

In the meantime, the policy suggestions mentioned in this chapter need to be examined and reviewed in conjunction with all of the other work and positive action being undertaken by the Ministry.

Proposals to be implemented

The policy suggestions made in earlier chapters of this report have been summarized in this chapter. All divisions in the Ministry should note the findings and suggestions in order to see what action might be taken for the good of primary schooling in the country. *Table 7.1* contains a list of all of the policy suggestions. The four columns to the right of the policy suggestions in *Table 7.1* contain the following information:

Primary responsibility: The division or unit, of the Ministry, that should be leading or initiating the implementation of the policy suggestion has been listed here. In some cases, two divisions or units will be required to contribute towards the implementation of the policy suggestion.

Data source: Some sources of relevant information that should be considered in implementing the policy suggestion have been listed under this heading.

Planning level: An attempt has been made in this column to classify the level of decision-making regarding the implementation of each proposal. Provincial decision-making within a national framework should be considered in several cases, while in other cases there will be a need for more central decision-making by the Ministry of Education. In respect of most policies, provincial offices are the implementing agency, with the key central role of the Ministry of Education being to work towards reducing the disparities among provinces, and to establish partnerships with funding agencies in order to improve overall levels of provision.

Time and costs: Two aspects of the implementation of the policy suggestions have been tabulated in this column: the approximate time-frame, and a rough classification of the costs of implementing the policy suggestion.

The suggestions listed in *Table 7.1* provide a starting point for discussion. Obviously, it would be far too expensive to attempt to address all suggestions simultaneously. Widespread consultation and debate will be needed in order to rank the suggestions in order of priority.

To achieve success with improving school buildings, and ensure that school and classroom furniture is provided, will depend to a great extent on the ability of the Ministry of Education to motivate local communities to increase their efforts. If outside donors are relied on for action in this area, this could take a very long time.

In terms of urgency, the highest priority must go to supplying textbooks/readers and classroom libraries (even through mobile libraries) to the schools. As has been emphasized in several chapters, giving pupils higher levels of access to books is a critical step towards improving their literacy levels.

It is suggested that the Ministry takes the above suggestions and reviews and refines them.

Classification of policy suggestions

There were a total of 36 policy suggestions made in *Chapters 3* to *6*. These suggestions were prepared on the basis of a careful interpretation of the results of the data analyses, and with the added benefit of consultations with decision-makers at different levels of the Zambia education system. It would not have been helpful for the Ministry of Education to receive these policy suggestions as a simple list. This approach would not have recognized the different nature of many of the suggestions and would have ignored differences in time and costs related to their implementation. Instead, it was decided to undertake a systematic classification of the suggestions according to their operational implications for the Ministry. It was considered that this form of classification would facilitate the selection of realistic avenues of action. Five main groups of policy suggestions emerged from this analysis. The following discussion lists the suggestions according to group membership, provides a short statement of the operational implications associated with each group, and gives three examples of actions required.

Group 1: Consultations with staff, community, and experts. This group contained five suggestions (3.5, 3.7, 3.16, 3.17, and 6.1) that called upon the Ministry to have consultations with major stakeholders in the education system. For example, consultations with teacher unions related to the practice of private tuition, an inspectors' conference focused on their new role in education, and consultations with school heads and teachers concerning parent meetings with teachers.

Group 2: Reviews of existing planning and policy procedures. This group contained nine suggestions (3.8, 3.10, 3.15, 3.21, 4.1, 4.3, 4.6, 5.1, and 5.4) that identified established practices in the policy and planning area which needed to be reviewed and evaluated. For example, the review and improvement of a national policy on homework by

the Inspectorate, a review of staffing procedures related to gender balance across the provinces, and the establishment of a national policy on frequency of classroom testing.

Group 3: Data collection for planning purposes. This group consisted of eight suggestions (3.9, 3.13, 3.14, 3.20, 4.2, 5.2, 5.3, and 6.2) that required the Ministry to collect important information that would be useful for planning purposes. For example, the collection and review of information concerning the procedures used by schools to identify pupils for grade repetition, a national audit of the availability of basic teaching materials in primary schools, and a national audit of the availability of basic pupil learning materials.

Group 4: Educational policy research project. This group contained six suggestions (3.1, 3.2, 3.3, 3.4, 6.3, and 6.4) that identified an educational policy research programme for the Ministry. For example, the design and implementation of a follow-up survey to the SACMEQ project, and investigation into grade repeating and its national economic implications, and a study of gender differences in participation rates for certain provinces.

Group 5: Investment in infrastructure and human resources. This group contained eight suggestions (3.6, 3.11, 3.12, 3.18, 3.19, 4.4, 4.5, and 6.5) that required the Ministry to mobilize and/or reallocate funds for professional development, teaching materials, and buildings. For example, implementation of specialist teacher training programmes in English, design and launch of a long-range plan for reducing the number of untrained teachers at the Grade 6 level, and commencement of a systematic programme to undertake major repairs of school buildings.

Table 7.1. Summary of Policy Suggestions in association with the relevant department(s), and the suggested time-frame/costs

Policy Suggestion	Primary responsibility	Data source	Planning level(s)	Time and costs
Group 1: Consultations with staff, community, and experts				
Policy Suggestion 3.5 The Ministry should establish a Task Force to examine options for taking educational action to compensate for the limited educational resources (books, possessions, parent education) available in some homes.	Planning Unit and MEPSU	School census returns	National	Short term/ Low cost
Policy Suggestion 3.7 The Ministry should meet with teacher union representatives to discuss the 'conflict of interest' that arises from the current practice of allowing the teachers to receive high financial rewards for teaching their own pupils as private clients outside of school hours.	Controlling Officer and the Administration	Meeting with unions	National	Short term/ Low cost
Policy Suggestion 3.16 School heads should be encouraged to ensure that their Grade 6 teachers meet with parents on a regular basis to discuss the progress of pupils.	Inspectorate	Conference	National	Short term/ Low cost
Policy Suggestion 3.17 The Inspectorate should hold a conference to discuss teachers' perceptions of their role and to explore avenues for improving their performance with respect to explaining the curriculum and to providing more information to teachers about professional self-development opportunities.	Administration and Personnel	Interviews and meetings with teachers	National	Short term/ Low cost
Policy Suggestion 6.1 The Ministry should establish a Reading Literacy Task Force at the primary-school level in order to undertake a comprehensive investigation into why the reading skills of Grade 6 pupils in Zambia are so poor in comparison with the 'minimum' and 'desirable' performance standards set down by the Zambian reading specialists.	Inspectorate, CDC, and ECZ	National conference of those responsible	National	Short term/ Low cost
Group 2: Reviews of existing planning and policy procedures				
Policy Suggestion 3.8 The Inspectorate should ensure that the national policy on homework for Grade 6 is applied by all teachers – giving particular attention to the existing arrangements for homework in Central and Eastern provinces.	Inspectorate Teacher training colleges	Analysis of existing regulations	National	Short term/ Low cost

Policy Suggestion	Primary responsibility	Data source	Planning level(s)	Time and costs
Policy Suggestion 3.10 The Ministry should request the Staffing Office to review the staffing procedures related to gender balance in the distribution of teachers across provinces.	Staffing and Personnel	Staffing records	National	Short term/ Low cost
Policy Suggestion 3.15 The Inspectorate should establish a common policy on the regularity of giving written tests to Grade 6 pupils so that there is greater uniformity across provinces in this important area of educational endeavour.	Provincial and district offices	Schools	District level	Medium term/ Moderate cost
Policy Suggestion 3.21 The Ministry, through the Zambia Library Services, should devise strategies to improve access to books through the provision of school and classroom libraries. Measures should be taken to ensure that, where school and classroom libraries are available, the pupils can borrow books and take them home to read.	Zambia Library Services and provincial offices	Provincial education officers. Discuss with communities, PTA and Education Boards	Provincial	Medium term/ Moderate cost
Policy Suggestion 4.1 The Ministry should: (a) develop a long-range programme for the construction of new schools – especially in Lusaka, and (b) put ceilings beyond which communities should not be allowed to expand existing schools.	Planning Unit	New school census form and school mapping	National	Long term/ High cost
Policy Suggestion 4.3 The Ministry should work out strategies aimed at reducing the overall pupil/teacher ratio – especially in schools in Lusaka and Central provinces.	Planning Unit at Ministry of Education and provincial offices in Lusaka and Central	School census	National and provincial	Medium term/ Medium cost
Policy Suggestion 4.6 The Inspectorate and the Supplies Unit should investigate ways of distributing available exercise books as soon as possible, especially to Lusaka and Western provinces. Education boards, schools and parent-teacher associations should address the serious issue of about a third of Grade 6 pupils being without a writing pen.	Inspectorate and MEPSU	Review of Supplies Unit procedures	National and provincial	Short term/ Moderate cost
Policy Suggestion 5.1 The Ministry should undertake an investigation into why the distribution of the material resources contained within the School resources index is so inequitable across provinces. Those provinces which have lower resource levels should receive priority treatment in future resource allocations.	Planning Unit	Special study	National and provincial	Short term/ Medium cost

Policy Suggestion	Primary responsibility	Data source	Planning level(s)	Time and costs
Policy Suggestion 5.4 Each Provincial Office should ensure that the school head and responsible authorities are informed about the Ministry's list of material resource inputs to schools and their associated benchmark levels.	Regional offices	Ministry regulations	National, provincial and school	Short term/ Low cost
Group 3: Data collection for planning purposes				
Policy Suggestion 3.9 The Planning Unit should undertake a study (a) to examine the procedure used by schools to identify pupils for grade repetition, and (b) to test whether these procedures are being applied in a 'rational' manner (in the sense that they are linked to valid measures of pupil performance).	Planning Unit and possibly contract to outside agency	Selected primary schools	National	Medium term/ Moderate cost
Policy Suggestion 3.13 The Ministry should undertake a national audit concerning the availability of basic teaching materials and classroom furniture, and then prepare a set of strategies involving partnerships with donor agencies, community 'self-help' groups, etc. to address major shortages.	Inspectorate and MEPSU	Interviews with school heads and members of the responsible authorities	National	Short term/ Low cost
Policy Suggestion 3.14 The Ministry should undertake a national audit concerning the availability of basic pupil learning materials and then ask the Supplies Unit to specify the steps to be taken to improve this component of the educational environment.	Inspectorate	Research project	National	Short term/ Low cost
Policy Suggestion 3.20 The Ministry should review the list of available school facilities with a view to developing a priority list for spending within the Medium-Term Strategic Plan.	Planning Unit Building Section	Revised school census form. Case study	National	Long term/ High cost
Policy Suggestion 4.2 It is important for future educational data analysis to examine the effects of classroom space on school effectiveness. Systematic data on this matter should be captured in the annual school census.	Planning Unit	School census	National	Short term/ Moderate cost
Policy Suggestion 5.2 The Planning Unit should undertake an investigation into why the allocation of material resource inputs among schools in the province of Luapula is so unequal for Toilets per pupil and Classroom library; and Southern for Classroom space per pupil.	Planning Unit	Luapula schools	National and provincial	Short term/ Low cost
Policy Suggestion 5.3 Each Provincial Office should be asked to develop and review the list of indicators requiring action by the provincial education officers and forward proposals to reduce inequities.	Planning Unit	Special provincial study	Provincial and national	Short term/ Low cost

Policy Suggestion	Primary responsibility	Data source	Planning level(s)	Time and costs
Policy Suggestion 6.2 The Ministry should undertake an investigation into the wide variation among provinces with respect to the mastery of basic literacy at the Grade 6 levels.	Planning Unit	Interview study	Provincial	Short term/ Low cost
Group 4: Educational policy research project				
Policy Suggestion 3.1 The Ministry should strengthen its capacity to analyze and synthesize educational data at all levels. It should also plan to undertake follow-up surveys of the same target population covered during SACMEQ's initial project in order to examine changes in important educational indicators over time.	Planning Unit	Repeat survey	National	Medium term/ Moderate cost
Policy Suggestion 3.2 The Planning Unit should undertake an investigation into the practice of grade repeating in Zambia in order to determine whether extra years of schooling can be justified on either educational or economic grounds.	Planning Unit or outside agency	Census data and household surveys	National and provincial	Short term/ Low cost
Policy Suggestion 3.3 The Ministry should carry out an empirical and in-depth scientific assessment of gender imbalances in enrolments at the Grade 6 level, especially in Luapula and Eastern provinces.	Planning Unit and possibly contract to outside agency	Special provincial study	National or Eastern province	Short term/ Low cost
Policy Suggestion 3.4 The Ministry of Health should undertake a small study on the incidence and consequences of children not receiving regular meals.	Ministry of Health	Small-scale survey	Province	Short term/ Low cost
Policy Suggestion 6.3 The Planning Division should undertake a study which compares the performance of pupils on the SACMEQ test and the Primary School Leaving Examination, and then bring forward some explanations for the major discrepancies in results.	Planning Unit, CDC	Selected schools in each province	National and provincial	Medium term/ Low to moderate cost
Policy Suggestion 6.4 The Examinations Council and The Curriculum Development Centre should be asked to examine pupil performance on each of the 59 items of the reading test in order to identify the most cost-effective strategy for revising or supplementing teaching materials, and for informing the design of in-service training programmes.	Planning Unit, ECZ, CDC	SACMEQ data	National	Short term/ Low cost

Policy Suggestion	Primary responsibility	Data source	Planning level(s)	Time and costs
Group 5: Investment in infrastructure and human resources				
Policy Suggestion 3.6 The Ministry should give a high priority to intensifying in-service training through the AIEMS (Action for Improvement of English, Mathematics, and Science subjects) project, especially in Northern, Western, and Southern provinces. It should also consider the allocation of teachers with an excellent command of English to Northern, Western, and Southern provinces in order to address the situation of the relatively lower percentages of Grade 6 pupils who are from homes where English is spoken.	Inspectorate	Provincial education officers organize training for school heads	Provincial	Medium term/ Moderate cost
Policy Suggestion 3.11 The Ministry should prepare, and commence work on, a long-range plan to reduce the numbers of untrained teachers at the Grade 6 level.	Staffing and Personnel and the Inspectorate	Staffing records	National and provincial level	Long term/ High cost
Policy Suggestion 3.12 The Ministry should, as a matter of urgency, establish a systematic programme of in-service training which is targeted towards improving the teaching skills of untrained Grade 6 teachers.	Inspectorate and MEPSU	Provincial studies	National and provincial	Medium term/ Moderate cost
Policy Suggestion 3.18 The Ministry should conduct an audit of the state of repair of school buildings and undertake those major repairs of school buildings that must be attended to immediately in order to prevent an acceleration of damage to buildings and the resources contained in them.	Planning Unit	Research project	National	Medium term/ Moderate cost
Policy Suggestion 3.19 The Ministry should consider options for working with a donor agency in order to implement a programme to provide water to schools.	Planning Unit	School census forms and ESIP design studies	National	Long term/ High cost
Policy Suggestion 4.4 The Ministry should, as a matter of serious urgency, address the problems of (a) the provision of adequate sitting and writing places – especially in the Northern and Central provinces, and (b) the development of a comprehensive furniture database clearly stating the stock of desks, their life span and shortfalls, and provincial disparities. A focused programme of action should be undertaken to meet the shortfalls and disparities.	Planning Unit, provincial offices and communities	School census	National and provincial	Medium term/ Moderate cost
Policy Suggestion 4.5 The Ministry should ensure that all classrooms are provided with usable chalkboards. The immediate focus for action in this area should be on Western and Lusaka provinces.	Supplies Section and communities	School census	National and provincial	Short term/ Low cost

Policy Suggestion	Primary responsibility	Data source	Planning level(s)	Time and costs
Policy Suggestion 6.5 The Ministry should design and implement a continuous system for monitoring literacy levels in primary schools which should feature a detailed analysis of sub-groups of students broken down by variables such as province, district, gender, socio-economic level, and school location.	Planning Unit, CDC	Sample surveys	National	Long term/ Moderate cost

Tackling the suggestions

As mentioned earlier in this chapter, the 36 policy suggestions listed in *Table 7.1* provide a systematic starting point for further debate and discussion with the Zambian Ministry of Education. The key aim of this process will be to prioritize the suggestions and then to commence a course of actions that recognize the prevailing difficult economic conditions in Zambia.

A number of the suggestions, for example the five listed under the category of 'Consultations', could all be addressed in the short term at low cost. Whereas other suggestions, for example those listed under the category of 'Investment', range from medium to long term and moderate to high cost.

The Ministry of Education's response to the above 'Agenda for Action' will demand the mobilization of effort and resources at all levels. In addition, there will need to be mechanisms set in place to monitor the implementation of actions taken to address the high-priority policy suggestions.

Conclusion

This educational policy report grew out of a series of research and training activities that were aimed at improving the capacity of educational planners to monitor the quality of education in Southern Africa. The collaborative 'SACMEQ approach' used to produce the report represents a genuine breakthrough for the conduct of educational policy research in Africa. It is extremely rare, in any part of the world, for a group of educational planners from many countries to join forces in this way in order to assist with the design, analysis, interpretation, and reporting of data derived from an educational survey research project based on common objectives and common instrumentation.

In early 1998 the SACMEQ group of countries will commence work on designing the research and training programmes related to SACMEQ's next educational policy research project. This will certainly be an exciting and important enterprise and will consolidate SACMEQ's role as a leading non-governmental organization that is devoted to improving the quality of education through systematic planning procedures. With a small amount of luck and an enormous amount of hard work, there is every likelihood that SACMEQ will begin the next millennium as Africa's strongest and most important cross-national educational research initiative.

References

Elley, W. 1992. *How in the world do students read?* The Hague: International Association for the Evaluation of Educational Achievements.

Fuller, W.A. et al. 1986. *PCCARP*. Statistical Laboratory, Iowa State University, Ames, Iowa.

Kish, L. 1965. *Survey sampling*. New York: Wiley.

Ministry of Education. 1996. *Educating our future: Ministry of Education policy*. Ministry of Education: Zambia.

Moyo, G. et al. 1993. A Southern Africa proposal for monitoring progress towards attaining the goals of the EFA Jomtien Conference concerning the quality of education. Confidential draft proposal. Paris: UNESCO/IIEP.

Murimba, S. et al. (Eds.) 1994. The analysis of educational research data for policy development: an example from Zimbabwe. Paris: UNESCO/IIEP.

Pollitt, E. 1990. Malnutrition and infection in the classroom. Paris: UNESCO.

Postlethwaite, T.N.; Ross, K.N. 1992. *Effective schools in reading: implications for educational planners*. The Hague: International Association for the Evaluation of Educational Achievement.

Ross, K.N. 1987. Sample design. *International Journal of Education Research*, 11 (1), 57-75.

Ross, K.N. 1991. *Sampling Manual for the IEA International Study of Reading Literacy*. Hamburg: International Association for the Evaluation of Educational Achievement.

Ross, K.N. (Ed.) 1995. From educational research to educational policy: an example from Zimbabwe. *International Journal of Educational Research* 23(4), pp. 301-403.

Ross, K.N.; Postlethwaite, T.N. 1992. Indicators of the quality of education: a summary of a National Study of Primary Schools in Zimbabwe. Paris: UNESCO/IIEP.

Ross, K.N.; Wilson, M. 1994. Sampling errors in survey research. In: T. Husen and T.N. Postlethwaite (Eds.), *The International Encyclopedia of Education* (pp. 5131-5142). Oxford: Pergamon.

Schleicher, A. 1995. *Data Entry Manager (DEM) User's Guide*. Paris: UNESCO/IIEP.

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